

Institutional Framework: Governance Shifts in the 1990s

The institutional framework, comprised of governing bodies and their implementation of laws, policies, and programs, determines the management of California's natural resources. This section focuses on California's emerging institutional frameworks influencing the discussion and creation of forest policy and laws.

Two forces have operated in the 1990s to reshape California's forest and rangeland institutions. The first factor was the strong influence of the federal government through its implementation of the federal Clean Water Act (CWA), the Clean Air Act (CAA), and the Endangered Species Act (ESA). See the Assessment document [Legal Frameworks](#) for more information. The second force was the rich and diverse increase in local activities within forested and range watersheds. These forces have driven substantial changes in the governance of California's natural resources by:



Watershed cleanup

- 1) requiring a broader scientific, watershed-based approach to analyzing and managing forests and rangelands;
- 2) encouraging greater collaboration among agencies, landowners, and the public, often through community or watershed-based groups that help resolve resource conflicts, carry out restoration, and improve management; and
- 3) promoting alternatives to State acquisition or stricter regulation, such as conservancies and land trusts.

Findings on the influence of the federal government

Scientific studies, public comments on proposed federal actions, and lawsuits founded in the federal CAA, the CWA, and the ESA have raised difficult institutional issues related to the management of natural resources in California and across the United States. Examples include:

- addressing habitat conservation needs across both time and space;
- providing space for development;
- managing land given uncertainty and limited information; and
- handling diverse questions on land ownership patterns, legal obligations, and motivations across a landscape.

As federal agencies have struggled with these matters, they have taken a number of actions that have influenced institutional approaches to public and privately owned forest and rangelands in California. These include:

- developing additional measures protecting waterbodies (streams, lakes and rivers) that currently do not meet federal water quality standards;
- providing additional protection for threatened or endangered fish and wildlife species; and
- implementing of stronger air quality standards addressing ozone and small particulate matter.

Additional protection measures for waterbodies

During the last decade, the federal government's authority to protect waterbodies was demonstrated by implementing the federal Clean Water Act (CWA) and the Clean Water Action Plan, put forth by the Clinton Administration in 1998. From an institutional viewpoint, attention has been more focused on water quality concerns within individual watersheds than previously was the case. Furthermore, silvicultural operations and range management have become increasingly influenced by Regional Water Quality Control Boards (RWQCBs).

Federal Clean Water Act (CWA)

The federal CWA has been implemented in two phases, especially as applied to timber harvesting on private and public lands. The first addresses the development of Best Management Practices (BMPs) and the second concentrates on plans for waterbodies that fail to meet one or more water quality standards. The federal Environmental Protection Agency (EPA) has played a significant role in both phases. Further discussion of these regulations can be found in Assessment sections titled [Legal Frameworks](#) and [Watershed Quality and Assessment](#).

The federal CWA also distinguishes between "point sources" and "nonpoint sources" of water pollution. Point sources refer to pollution coming from discrete sources, such as a discharge pipe from a factory or a sewage treatment plant. Nonpoint source pollution refers to all other sources of pollutants that are not point sources. These include landscape scale sources such as runoff from storm water and agricultural, range, and forestry operations, as well as dust and air pollution that contaminate waterbodies.

Forestry and ranching operations can deliver nonpoint sources of pollution. During the 1980s and early 1990s, the EPA and state water agencies emphasized development and application of BMPs that would prevent pollution from entering waterbodies from nonpoint sources. Under the CWA, BMPs are technologically and economically feasible management practices that will reduce pollution from nonpoint sources.

In the mid-1970s the California State Water Resources Control Board (SWRCB) entered into an agreement with the U.S. Forest Service (USFS) in order to implement BMPs for public lands. Under this agreement, the USFS was responsible for implementing BMPs that addressed all activities on its lands, monitoring BMP results, and reporting them to the SWRCB. The State entered into a similar agreement (a Management Agency Agreement) with the California State Board of Forestry and Fire Protection (BOF) and the California Department of Forestry and Fire Protection (CDF) in order to implement BMPs on

privately owned forestlands. Under this agreement, BOF significantly revised its rules in order to improve protection of water quality, increase monitoring, and establish procedures for conflict resolution with both regional water boards and the California Department of Fish and Game (DFG). Pursuant to the agreement, BOF sought and obtained amendments to the Forest Practice Act in order to improve post-harvest monitoring and to expand the scope of applicable rules. The RWQCBs in turn limited use of some of their enforcement powers under state law and, as a practical matter, de-emphasized their reviews of proposed timber harvest operations.

The EPA accepted and certified the agreement with Region 5 of the USFS in California as satisfying the intent of the CWA. However, they did not certify the agreement with BOF and requested that additional conditions be met. BOF completed additional work on the agreement, but the program has not been resubmitted to the EPA. In July 2002, SWRCB commenced a review of the MAA.

The CWA (Section 303 (d)) also stipulates that waters not attaining quality standards using current approaches be cataloged by state agencies. These waters are referred to as “impaired” and the causes for not meeting water quality standards must be listed. States must develop Total Maximum Daily Loads (TMDLs) for waters on this list. The TMDL generally defines the pollution limit for each watercourse by pollution source. At a minimum, a TMDL must account for current and future pollution contributions from both point and nonpoint sources. EPA is required to review and approve both the list of impaired waters and each TMDL. If the agency cannot approve the list and associated TMDLs, then it must establish them for the state.

In recent years, over 40 lawsuits have been filed against the federal EPA regarding its responsibility to approve TMDLs. Some of these lawsuits have ended in negotiated settlements and consent decrees overseen by the courts. California is now operating under three consent decrees that establish TMDL completion schedules for most of the north coast region, all of the Los Angeles region, and Newport Bay and its tributaries in the Santa Ana region (SWRCB, 2000a). These schedules mandate that 39 TMDLs related to the north coast be finished in a ten-year period, as well as over 750 in southern California (SWRCB, 2000b).

In 1998, SWRCB submitted a list of impaired waterbodies to the U.S. EPA that incorporated both impairment causes and priorities for action. Many of the rivers on the north coast were included in this list. In those cases in which waters were impaired by sedimentation, silvicultural operations were often indicated as one of the root causes. In November 1998, the EPA approved SWRCB’s decisions, added additional waters and impairment causes, and then approved a final list in May 1999 (SWRCB, 2000b). The list is being revised in 2002. See the online document [Revision of the Clean Water Act Section 303\(d\) List of Water Quality Limited Segments](#) for more information.

TMDLs in California are developed either by RWQCBs or the federal EPA. TMDLs developed by RWQCBs are framed as watershed basin plan amendments and have implementation provisions. In contrast, TMDLs developed by the EPA do not have implementation provisions. As of April 2002, the North Coast Water Quality Control Board had completed a TMDL for the Garcia River regarding sedimentation, and the EPA had finished TMDLs for eight rivers or river portions on the north coast (South Fork Trinity River court settlement) (SWRCB, 2002). The TMDL process has impacted forestry

practices on private lands in two ways that are especially evident on the north coast. First, proposed timber operations must specifically address factors that contribute to the listed pollutant, such as sedimentation or temperature. Furthermore, both the number of RWQCB staff and the presence of water quality staff in field reviews of timber harvest plans (THPs) have increased. TMDLs have resulted in a more defined planning and monitoring structure concerning rangeland practices on private lands.

Clean Water Action Plan

The Clean Water Action Plan was put forth by the Clinton Administration in February 1998. This initiative requested that states and Native American tribes, in conjunction with federal agencies and other organizations, develop a Unified Watershed Assessment (UWA) that allocates new federal resources for watershed protection (SWRCB, 2000a). The plan called for watersheds to be placed into different categories, and funds were predestined for restoration activities.

The plan also called for states and tribes, in conjunction with other organizations, to establish allocation priorities among Category I watersheds for proposed federal funds during fiscal years (FYs) 1999 and 2000. Subsequently, restoration strategies were identified for top priority Category I watersheds as well as strategies addressing non-priority Category I watersheds.

The process for developing a UWA in California was developed jointly by SWRCB staff and the USDA Natural Resources Conservation Service (NRCS). A multi-agency working group coordinated the effort. Many groups and stakeholders were involved; however, they were subject to caveats that the assessment would not impose new regulatory requirements and would be used only to target new federal funding for FYs 1999 and 2000. A draft of California's UWA was released for public review in August 1998, and over 170 written comments were received concerning the draft. A final draft was produced on October 1 of 1998, delineating 66 top priority Category I watersheds. Priorities were based on public comments, SWRCB watershed priorities, and ranking criteria related to high value, high risk, and high opportunity.

From an institutional viewpoint, the California UWA sought to increase collaboration between governmental agencies and stakeholders. The working group represented a broad cross-section of participants interested in land use policy and water quality. The effort resulted in a significant consensus regarding the establishment of priorities for watershed restoration. This consensus may have been partly due to already available information and assessment tools (SWRCB, 2000a). However, the process was conducted over a relatively short time frame and did not necessarily provide a way to address suspicions of landowners and organizations that results would lead to further restrictions.

The SWRCB and the RWQCBs have developed an integrated planning approach called Watershed Management Initiative (WMI). Though not required by law, the initiative does help watershed management and coordinates existing programs. Under the initiative, each RWQCB develops strategies to meet water quality needs within individual watersheds. These strategies are reflected in each RWQCB's Watershed Management Plan and are updated annually. Stakeholders are also involved in development of the strategies and solutions (SWRCB, 2000c).

Since 1998, the Legislature has funded new staff to carry out the WMI. This funding became permanent in fiscal year 2000-2001. A major responsibility of WMI coordinators is to work with local watershed groups and stakeholders on local issues and to serve as a point of contact in order to improve public access to RWQCBs. Other tasks of the coordinators include preparing WMI integrated plan chapters and coordinating with other State, federal, and local agencies on watershed specific issues.

The influence of the federal Endangered Species Act

Perhaps more than any other federal law, implementation of the ESA over the last decade has influenced forest and range institutions in California. The law and subsequent regulations have raised difficult implementation and interpretation issues. These concerns are especially true for species that have large ranges, significant numbers, and evidence of population decline that if continued, could have serious consequences, such as the depletion of coho salmon or the northern spotted owl. Decisions must be made affecting watershed areas based on limited information and frequently, a high degree of uncertainty. Opinions are based on science, linkages between land use and ecosystems, and the concept of acceptable risk. Management decisions have tried to account for situations that are complex, constantly changing, and that vary in time and space (Behan, 1997).

The ESA is administered by two federal agencies: the National Marine Fisheries Service (NMFS now called NOAA Fisheries), which oversees issues concerning salmon and similar ocean species; and the U.S. Fish and Wildlife Service (FWS), which oversees issues concerning other species. Until the early 1990s, neither of these agencies exercised much influence concerning decisions involving California forests and rangelands. Since there was a need to enforce the ESA, these agencies were thrust into a major role in forest and range decision-making, largely under the pressure of litigation. Today, they greatly influence what occurs in the management of California's forests and rangelands.

ESA structure: The federal ESA prohibits federal entities from authorizing, funding, or carrying out any action that could "jeopardize" the continued existence of any endangered species. In addition, it prohibits federal agencies from any action that is likely to "result in the destruction or adverse modification" of "critical habitat" as designated by federal agencies.

Federal agencies enforce this act's requirements through a consultation process. Agencies can develop special rules (4(d) rules) for private projects that set out conditions that if met avoid "take" of a listed species. Landowners may also develop Habitat Conservation Plans (HCPs). These plans allow FWS and NMFS to issue permits for "incidental take" of listed species, provided that the plans both mitigate and minimize the impacts of taking. Before approving HCPs, federal agencies must find that any authorized taking will not jeopardize the species.

The first impacts of the ESA on California's forests and rangelands occurred in 1990 and involved the California gnatcatcher in southern California and the northern spotted owl in northern coastal California. These bird species occupy large areas of specialized habitat that could potentially be used for commercially valuable activities—timber harvesting on owl inhabited lands and land development on gnatcatcher-inhabited lands. Later in the decade, lands inhabited by other extensive species, including the marbled murrelet, coho salmon, steelhead, and the California red-legged frog, were also affected by the ESA (Table 1).

Table 1. ESA actions and their impact on non-federal lands

Species	Federal action/agency	Impact of federal government action at state level on non-federal lands
Northern spotted owl	Threatened/FWS	Led to FPR for surveys and leaving more trees for habitat protection; also promoted development of HCPs by some timber companies
California gnatcatcher	Threatened/FWS	Focused existing California Natural Community Conservation Planning (NCCP) program
Marbled murrelet	Threatened/FWS	Led to FPR for surveys and leaving more trees for habitat protection
California red-legged frog	Threatened/FWS	Additional attention was given to surveys and protection
Coho salmon	Threatened/NMFS	Fostered changes in FPR to strengthen cumulative effects analysis and more on-site protection for coho, such as enhanced buffer strips; also promoted development of HCPs by some timber companies
Steelhead	Endangered in southern portions of range; threatened in middle portions of California range; not listed in Klamath Province/NMFS	NMFS study claimed FPRs not sufficient to protect steelhead in listed areas. Led to prolonged negotiations over what is necessary for more protection; and incorporation of stronger protection processes in THPs; also promoted development of HCPs by some timber companies

Land use issues concerning the gnatcatcher and the northern spotted owl underscore themes that have been repeated from the 1990s to today. These include:

- addressing habitat conservation needs across both time and space that anticipate continued land use pressures such as timber harvesting and development;
- setting aside large reserves that cover many habitats and are connected across a landscape;
- active management given uncertainty and adaptation when outcomes can be predicted;
- the necessity of collaboration between agencies, landowners, and the public;
- questions concerning management of highly different land ownership patterns, legal obligations, and motivations across a landscape; and
- the magnitude and distribution of the economic impacts.

The struggle to address these themes led to a variety of plans including:

- Natural Community Conservation Plans (NCCP) efforts in southern California;
- Northwest Forest Plan (NWFP) in the north coast,
- Sierra Nevada Forest Plan Amendment plus the Sierra Nevada Ecosystem Project (SNEP) in the Sierra,
- California Desert Protection Act of 1994 and related planning process, and
- Interagency Ecological Program (IEP) for the Sacramento-San Joaquin Estuary.

All of these plans have developed integrated data and bioregional assessments for major portions of the California landscape and have influenced the way in which information is reviewed and decisions are made.

Natural Community Conservation Plans process for the California gnatcatcher and coastal sage

In 1991, the California gnatcatcher, a tiny bird found only in coastal sage scrub habitat in southern California and much of Baja California in Mexico, was under consideration for both federal and state endangered species lists. Coastal sage scrub is home to a number of rare native species, and nearly 80 percent of remaining habitat exists on private lands. Substantial development was being considered for much of this area on both the U.S. and Mexican portions of the range although the Endangered Species Act only applies to the U.S.

By 1990, experience with both species-by-species consultations and Habitat Conservation Plans (HCPs) had raised numerous concerns over the protection given to species as well as the cost and burden to landowners. The continual fragmentation of habitats and ecosystems would endanger many species but not every acre of habitat was necessary to maintain the various species if an efficient plan was implemented. Thus, in an attempt to circumvent the limitations of the single-species, project-by-project approach to conservation, the California Assembly passed the California NCCP Act of 1991 (Section 2800-2840 of the Fish and Game Code) (Legislative Council of California, 2001). The act created a framework, or structure, for agreements but did not specify either the details or the process that should be followed to prepare them. It permitted the DFG to allow the taking of any species whose “conservation and management is provided for” in the plan.

Three factors influenced the NCCP process from 1991-1993. First, prior to passage of the California NCCP Act, governmental agencies and other interested parties in southern California had begun to formulate multi-species recovery plans but discovered that the process was complex and time consuming. Second, attempts to improve NCCPs failed including efforts to list the gnatcatcher as endangered under the California ESA. Third, the FWS listed the gnatcatcher as a federally threatened species in 1993 (Pollak, 2001a).

This federal listing compelled the HCP and the California NCCP processes to integrate. Shortly after the California NCCP Act went into effect, a NCCP Scientific Review Panel (SRP) was formed. The SRP consisted of five scientists appointed by the California Resources Agency and the DFG. The goal of the SRP was to assemble scientific information on the biology and ecology of the coastal sage scrub ecosystem and to develop appropriate conservation guidelines.

By August 1993, the SRP delineated the major areas of habitat to be targeted for conservation and created general guidelines concerning coastal sage scrub conservation and reserve design. One guideline recommended that loss of coastal sage scrub in the planning region be limited to 5 percent of the existing habitat. The FWS adopted final rules in December 1993, including the 5 percent guideline (Pollak, 2001a).

The NCCP process has been used to develop protections for both coastal sage scrub and numerous other species in a southern California “pilot” program. State and federal agencies have worked closely and cooperatively in this effort to ensure that the planning process satisfies both the California NCCP Act and the HCP requirements of the federal ESA (Pollak, 2001b). The components of the NCCP program (Presley, 2002) focused on:

- Locally driven collaborative partnerships;
- Ecosystem-based approach;
- Comprehensive science-based conversation strategies;
- Authorizes “take” of a listed and unlisted species; and
- Complements federal Endangered Species Act process.

The southern California NCCP pilot program: The planning area for this program has been divided into 11 subregions. Subregional boundaries reflect both habitat locations and historical/political factors. Plans are developed for each subregion and approved by federal and state wildlife agencies before they go into effect. To date, four subregional plans have been approved (Figure 1). Additional multi-species planning efforts are also under way in the NCCP area.



Source: DFG, 2002

Of the four subregions in the pilot area with approved plans, the largest is the San Diego Multiple Species Conservation Program. Approved in December 1996, it covers 582,000 acres and includes a 172,000-acre preserve system in southwestern San Diego County. The program addresses 85 species of plants and animals and 23 vegetation types. The program also contains sub-areas, all at different stages of planning (DFG, 2002). See the online document [Natural Community Conservation Planning Update](#) for more information.

In 2000, the California NCCP Act was amended to establish criteria for independent scientific review and public participation (Legislative Council of California, 2000). It was further amended in 2002 to make the process subject to the California Environmental Quality Act (CEQA) (Legislative Council of California, 2002). The act requires that species, habitats, and reserves targeted for conservation be identified and maintained and that lands capable of development also be identified. Participants to NCCP plans are required to enter into an implementation agreement specifying their obligations. Based on the plan, DFG would then issue incidental take permits for covered species and assurances against regulatory changes that cannot be foreseen. Enforcement is intended to occur through the “incidental take” process.

It is still too early to conclude whether or not NCCP programs successfully preserve species. It is also uncertain whether or not they address the complexity of ecological and human-based questions relating to conservation of species, including those on forest and rangelands. Support for NCCP programs varies, and a host of issues remains concerning feasibility (funding, oversight, and workability), scientific basis (standards, quality, and ability to achieve adaptive management), and stakeholder acceptance (Pollak, 2001b). However, the California NCCP program is expanding beyond its original pilot boundaries. Examples include: 1) efforts in Placer County to use the county open space program (known as “Placer Legacy”) as the foundation of an NCCP program; 2) a multi-species conservation plan for the Coachella Valley in Riverside County; and 3) the multi-species conservation strategy of the CALFED Bay-Delta program.

Northwest Forest Plan

Concerns emerged in the late 1980s relating to habitat loss of the northern spotted owl in north coast forestlands, as they had previously in the Pacific Northwest. Classifying the owl as endangered under the federal ESA led to increased protection of owls on both private and public lands. A series of court-ordered injunctions caused timber harvesting in federal forests to virtually cease.

In an attempt to resolve the bitter, ongoing debate concerning federal forest policy, President Clinton convened a forest conference in Portland, Oregon, on April 2, 1993 (Pacific Northwest Information Node, 2002). See the online document [Northwest Forest Plan](#) for more information. As a result of the conference, the President charged the Forest Ecosystem Management Assessment Team (FEMAT) to conduct a study that would provide analysis and develop options meeting certain policy goals (Pipkin, 1998). These goals included:

- allowing timber harvesting in situations where environmental protection could be achieved;
- creating new economic opportunities where this objective could not be achieved;
- protecting the long-term health of forests, wildlife and waterways;
- using sound science and credible ecological principles, and maintaining predictable and sustainable levels of timber harvesting that could be legally defended; and
- requiring federal agencies to work both with each other and with the public in order to reach these objectives. See the online document [The Northwest Forest Plan Revisited](#) for more information.

A team of federal scientists and agency staff was appointed to conduct the study. In June 1993, the team submitted a report entitled “Forest Ecosystem Management: An Ecological, Economic, and Social Assessment Report of the Forest Ecosystem Management Assessment Team (FEMAT).” The FEMAT report presented 10 options for managing national forests within the range of the spotted owl.

On July 1, 1993, President Clinton announced the selection of Alternative 9. The option consisted of three parts: 1) a program of forest management whose primary objective was to protect biological diversity on federal lands; 2) a framework that coordinated both federal agency implementation of the forest management effort and public involvement; and 3) an agenda that provided economic assistance and job retraining for displaced timber workers, communities, and others adversely affected by the new plan. The forest management and implementation part of the strategy was assessed in a supplemental environmental impact statement, and both the final environmental impact statement and record of decision (ROD) were published in February 1994. The ROD amended the planning documents of 19 national forests and seven U.S. Bureau of Land Management (BLM) districts.

The plan affected federal lands in Del Norte, Glenn, Humboldt, Lake, Mendocino, Shasta, Siskiyou, Tehama, and Trinity counties. Perhaps the most significant element of the plan affecting these counties was the establishment of an ecosystem-wide framework whose purpose was to restore aquatic ecosystems and increase the amount of federal lands set aside as late successional and old growth forest reserves. This approach was applied in each of the five north coast national forests (Six Rivers, Klamath, Shasta, Trinity, and Mendocino).

The increases in reserves, including many riparian areas, substantially reduced the acreage available for timber production. Some management is allowed in late successional reserves if it can be demonstrated that the primary purpose is to reduce the threat of wildfire and insect infestation.

Cutbacks in the north coast timber industry: In 1989, a date that precedes most federal forest policy, north coast harvests exceeded 700 million board feet on public lands and 1.7 billion board feet on private lands (Raettig and Christensen, 1999). The impacts of the NWFP were largely realized by 1994 and were reflected by timber harvest declines on public lands exceeding 87 percent to about 94 million board feet. On private lands, timber harvests had declined by approximately 29 percent to 1.24 billion board feet. By 1994, harvests had declined by over 60 percent in Siskiyou, Trinity, Lake, and Glenn counties and by over 30 percent in Del Norte, Tehama, and Mendocino counties.

At the same time, the volume of logs processed fell from about 2.5 billion board feet in 1989 to 1.2 billion board feet in 1994. The total number of operating sawmills declined from 48 in 1988 to 31 in 1994. Regional employment in the forest products industry (Standard Industrial Classification [SIC] sector 24) fell from 12,881 in 1990 to 10,939 in 1994, a decline of 15.7 percent. This is less than the total State average employment decline of 24.9 percent for SIC 24 over the same period. The greater statewide number probably reflects declines in federal timber supply in the Sierra and other factors as well.

Proportionally, decreases in regional employment were much less than declines in timber harvesting. The impacts were also uneven between counties. Counties with the greatest proportionate decrease in harvest were not necessarily those with the largest proportionate decreases in employment. Del Norte, Trinity, Siskiyou, Shasta, and Lake experienced over 25 percent decrease in SIC 24 employment. At the same time, Humboldt and Trinity counties experienced an increase in SIC 24 employment due to the location of processing centers and growth of secondary forest products industries.

The NWFP also provided economic incentives and community assistance in the form of the Northwest Economic Adjustment Initiative (NWEAI). In this initiative, President Clinton promised

Oregon, Washington, and California \$1.2 billion over a three-year period. Each state was guaranteed a minimum 15 percent of this total, and the remainder was to be distributed based on demonstrated need. The purpose of these funds was to assist affected areas in creating a more diversified economy and reducing timber dependency. In November of 1996, the program was extended for an additional two years.

Under the NWFP, State and regional Community Economic Revitalization Teams (CERTs) were established to coordinate program operations for worker and community assistance programs. This approach was new in rural California communities because of their limited capacity to plan and implement changes resulting from severe declines in the timber industry.

The California CERT: The California CERT held its first meeting in late 1993. It represented the nine affected counties and was comprised of a mix of federal, state, and local government delegates. Members of county boards of supervisors ultimately played a key role in the program. See the online document [Part II – Local Government Perspective](#) for more information. While communication was difficult in the beginning, strong networks and working relationships developed over time and projects were accomplished in the field (California Environmental Resources Evaluation System, CERES, 2002b).

Between 1994 and 1998, California received over \$179 million from the NWEAI for various projects (Raettig and Christensen, 1999). This money was used for small business zones, economic development grants, job training, and funds that provided jobs on restoration projects for displaced workers (CERES, 2002c). Out of the 10 counties in the eligible area, Lake, Siskiyou, and Trinity received 52 percent of the NWEAI county-level funding reported by the California CERT (Raettig and Christensen, 1999).

The NWFP also established a complex interagency structure to carry out the mandate for agency coordination and greater public involvement. See the online document [The Northwest Forest Plan Revisited](#) for more information. This structure initially proved to be a challenge in California. Communication between agencies and members of the public was at times difficult, and it was often felt that the needs of California, distinct from those of Oregon and Washington, were not being met (ibid). Eventually, several new networks and relationships between agencies and the public were established and still operate today (Pipkin, 1998).

While the NWFP was intended to protect species on public lands, the listing of endangered species continued to impact private lands. In addition to the northern spotted owl, other species listed as endangered during the 1990s, including the marbled murrelet, coho salmon, red-tailed frog, and steelhead, affected forests and rangelands.

Sierra Nevada

The federal government influenced the Sierra Nevada through two interrelated measures: protection of the California spotted owl and management of the SNEP, an exhaustive effort to conduct an ecological study of the Sierra Nevada.

The USFS first recognized the California spotted owl as a “sensitive” species in 1984. Debate in the late 1980s concerning protection of the northern spotted owl on national forest lands in the Pacific Northwest helped focus attention on the California spotted owl. In mid-1991, the California Resources Agency in partnership with the USFS Regional Forester formed the California Spotted Owl Assessment and Planning Team. The USFS also set up a collaborative process involving federal, State, and local government, as well as representatives from the private sector and environmental groups. A framework was established to provide biological (technical), economic, and policy expertise. State and federal

collaborative science and policy efforts resulted in major reports on both topics (Verner et al, 1992 and Standiford et al., 1994).

The USFS issued interim guidelines protecting the California spotted owl on 10 Sierra national forests in January 1993. See the online document [CASPO Interim Guidelines](#) (referred to as the CASPO report) for more information. These guidelines focused on protection of spotted owl habitat, especially maintenance of stand basal area, canopy closure, and larger trees. These new strategies caused fundamental shifts in timber sale policies on Sierra national forests (U.S. Forest Service, Pacific Southwest Region, 2002) (Table 2).

Table 2. Average annual sawtimber sold from national forests in the Sierra Nevada, 1988-1999
(million board feet)

National forest	1988-1990	1991-1993	1994-1996	1997-1999
Eldorado	158.4	109.5	5.9	40.6
Inyo	5.1	5.2	0.3	1.1
Lassen	134.9	124.2	19.3	41.7
Modoc	51.9	31.6	5.2	9.2
Plumas	185.3	75.6	20.0	23.3
Sequoia	48.5	47.7	4.9	14.1
Sierra	122.6	51.8	19.4	10.9
Stanislaus	180.1	47.4	14.2	31.7
Tahoe	103.3	33.3	47.3	31.1
LTBMU*	4.0	3.6	13.8	1.4
Humboldt-Toiyabe	5.4	3.2	3.3	0.0
Total	997.5	533.0	153.7	205.1

*Lake Tahoe Basin Management Unit

Source: U.S. Forest Service, Pacific Southwest Region, 2001a

The USFS adhered to CASPO by developing amendments to forest plans for the 10 Sierra national forests in the form of a Draft Environmental Impact Statement (DEIS). The USFS recommended two management alternatives in its DEIS. The first, favored by the USFS and reflecting a proposal by the Quincy Library Group (QLG), incorporated a five-year pilot program designed to thin approximately 70,000 acres annually in the Plumas, Lassen, and Tahoe national forests. The plan would provide fire protection along roads and ridge tops and supply more timber to the local economy than allowed by CASPO. The second option was similar, but thinned zones would incorporate larger areas and there would be less total timber harvested. After much public comment, the USFS prepared a revised DEIS. However, it was withdrawn immediately before its planned release in 1996. The USDA commissioned a review to determine the scientific merit of the revised DEIS. The review set a new planning process in motion that resulted in the Sierra Nevada Framework, released in 2001.

The Quincy Library Group: The Quincy Library Group (QLG) was established in 1992 when a forester, a county supervisor, and a local environmental activist began meeting at the public library in Quincy, California. See the online document [Quincy Library Group Background](#) for more information. QLG concentrated on finding ways to solve conflicts over management of national forests in Lassen, Plumas, and Sierra counties. See the online document [QLG Case Study](#) for more information (Terhune and Terhune, 1998).

When the USFS issued CASPO, its interim national forest management guidelines to protect the California Spotted owl in January 1993, it was necessary for the agency to prepare proposed amendments to forest plans as well as a related DEIS. Since this effort would take time and probably involve litigation, QLG proposed a five-year management program in 1993 addressing both Lassen and Plumas national forests as well as the Sierraville Ranger District of the Tahoe National Forest. This program attempted to provide USFS with the needed time to prepare amendments while limiting disruption to the local economy and environment.

The proposal envisioned an all-age, multistory, fire-resistant forest. It emphasized timber management by group and single-tree selection, protection of riparian habitat and deferral of harvest in specified sensitive areas, watershed restoration, and use of CASPO fire and fuels management objectives. It also suggested the continuation of small business set-asides and expanded stewardship contract programs administered by the USFS.

Since the USFS withdrew its DEIS in 1996 and implementation of the QLG proposal had continually been delayed, QLG requested that the U.S. Congress consider its proposal. This effort led to the passage of the Herger-Feinstein QLG Forest Recovery Act of 1998 (QLG, 1998). See the online document [The Herger-Feinstein Quincy Library Group Forest Recovery Act](#) for more information. Consistent with the QLG proposal, the law provided a system of forest health and community stability efforts (Kennedy, 1996). See the online document [Forest Health Pilot Project 1996: Highway 89 Defensible Fuel Profile Zone Sierraville Ranger District, Tahoe National Forest](#) for more information. This act included protection for roadless areas designated by QLG and required a program of riparian management and protection for environmentally sensitive areas. Before resource management activities were implemented in any specific area. This act mandated that it be consistent with other environmental laws, a DEIS be completed, and the process be open to public review.

In August 1999, the USFS issued a DEIS addressing the QLG pilot project. The DEIS concluded that the project could be implemented legally with one possible exception. It might threaten the viability of the California spotted owl, a potential violation of the National Forest Management Act. Since the broader Sierra Nevada Framework Planning effort, already in progress, was addressing the issue of the California spotted owl on a range-wide basis, the Record of Decision (ROD) deferred all resource management activities in spotted owl habitat. The net impact of this limitation severely curtailed harvest under the pilot project.

The USFS issued the Sierra Nevada Forest Plan Amendment (SNFPA) and ROD in January 2001 (U.S. Forest Service, Pacific Southwest Region, 2001b). This plan addressed 11.5 million acres and amended the forest plans of 11 Sierra Nevada national forests. The SNFPA limited full implementation of resource management activities outlined in the Herger-Feinstein QLG pilot project. QLG, along with scores of others, appealed the decision.

On November 16, 2001, the Chief of the Forest Service supported the SNFPA, with several qualifications. One of which requires the Regional Forester to delineate ways “to better synchronize the plan with the goals of the Herger Feinstein QLG Act.” At its monthly meeting held on November 27, 2001, the QLG voted to “suspend regular public meetings because the Sierra Nevada Framework has effectively killed our project and until it is removed there is no effective way to implement our project as designed by the QLG and passed by Congress” (QLG, 2001a). QLG stated that the social and economic effects of the SNFPA “can be measured in the \$14.4 million swing of four projects that were originally listed as revenue producing timber sales under the fiscal year 2001 Implementation Plan. The effect of the Sierra Nevada Framework on these projects was to cause them to be offered as non-revenue producing service contracts” (QLG, 2001b).

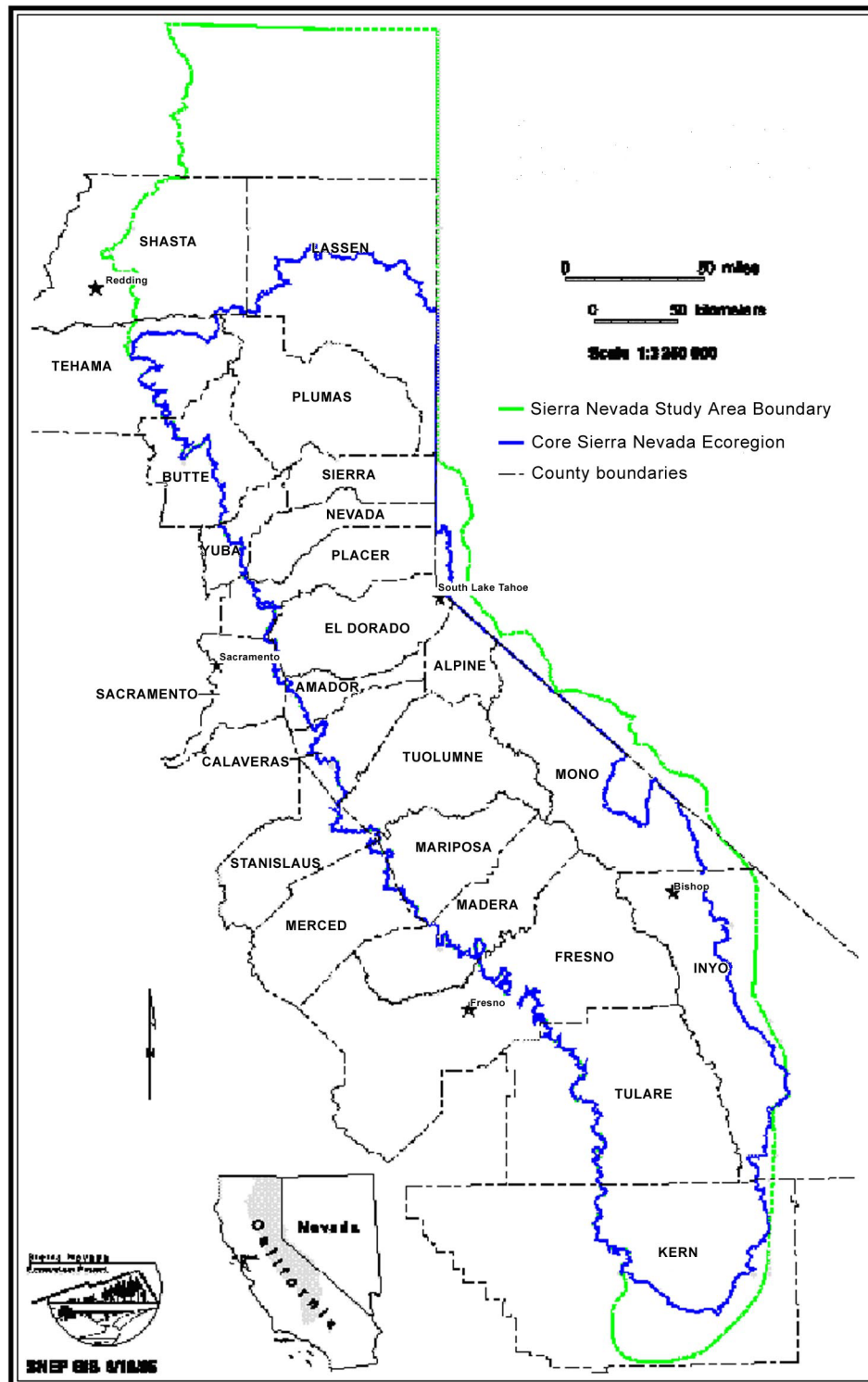
In the summer of 1998, the USFS launched a new effort addressing forest management issues in the Sierra Nevada. After numerous public meetings and workshops, the USFS issued the Sierra Nevada Forest Plan Amendment (SNFPA) and ROD in January 2001 (U.S. Forest Service, Pacific Southwest Region, 2001b). This plan addressed 11.5 million acres and amended the forest plans of 11 Sierra Nevada national forests.

The plan provides for nearly 5.5 million acres of “general forest.” In these areas, limits are imposed on where and how trees up to 20 inches in diameter can be harvested. Trees over 20 inches in diameter cannot be harvested. Exactly 50 percent or more of the canopy must be retained, and in any decade no more than 20 percent of the canopy cover may be removed. About four million acres of the forest are protected as “old growth reserves.” Any management in these areas must improve old growth characteristics of the forests. The plan grants additional protection for the Pacific fisher and the California spotted owl. There is also increased focus on reduction of forest fuels in and near communities at risk to wildfire.

The chief of the USFS received 276 appeals challenging the SNFPA and its final environmental impact statement (USFS, 2001). In November 2001, the chief upheld the amendment and instructed the Regional Forester to review certain elements (Bosworth, 2001). In December of the same year, the Regional Forester released an action plan that detailed the review process and appointed a team to complete the review and address needed amendments (Blackwell, 2001).

Another factor in the Sierra was the production of the SNEP Report. The effort was part of a seven million dollar project requested by the U.S. Congress in 1992 to perform an in-depth analysis of the Sierra. The core area of SNEP covered over 20.6 million acres and included the headwaters of 24 major river basins extending through the foothill zone on the west side and the base of the escarpment on the east side. At the request of Congress, a larger study area was also examined beyond the northeast and south of the core area (Centers for Water and Wildland Resources, 1996) (Figure 2).

Figure 2. SNEP study areas and county boundaries



Source: SNEP, 1996a

The principal goal of SNEP was to provide accurate information that would advise Congress on what could be done to manage Sierra ecosystems in a sustainable manner. The assessment included a scientific review of late-successional forests, key watersheds, and significant natural areas on federal lands in the region. The analysis was broad-based and included social, economic, and ecological elements. SNEP compiled a large amount of new and existing geographic data and information pertaining to the Sierra Nevada ecosystem. The SNEP final report was submitted to Congress in 1996 (SNEP, 1996b). See the online document [Sierra Nevada Ecosystem Project: Final Report to Congress](#) for more information.

Key SNEP report points: The SNEP report identified a number of problems with Sierra ecosystems and suggested several strategies for improvement. There is enormous variability in ecosystems due to natural and human-caused factors. Over the previous decade, the greatest rate of habitat loss occurred in oak woodlands, grass savannas, and riparian communities. This conversion has traditionally been caused by rangeland clearing and more recently by residential and commercial developments. Riparian habitats in the foothill zones have suffered proportionately greater reduction than those elsewhere in the range.

Historically, people have considered most Sierra Nevada resources (such as timber and forage) primarily valuable as commodities. Recently, the population has valued the region because of the amenities provided as well as other lifestyle values. This is partly due to the fact that people are much less dependent on traditional resource extraction activities for income. However, community values and income sources vary, and the economies of many communities are depressed because of limits on resource use.

Ultimately, the amount of land converted from resource uses will depend on the rate of population growth, the spatial pattern of settlement, and the average density of homes. SNEP presents four alternative development futures that depend on models of settlement, existing density options from county general plans, and population projections from the California Department of Finance. SNEP also identifies a number of ongoing and future challenges and suggests some possible strategies. Strategies place emphasis on sustainable management of the entire landscape. For the most part, SNEP did not address funding needs or sources. This deficiency has been an issue addressed by the post-SNEP efforts of governmental agencies and the private sector.

California Desert

An initiative that has directed federal policies on desert areas in California is the California Desert Protection Act of 1994. This act followed years of debate about the impact of activities such as off-road vehicles, grazing, and mining on desert lands in California. Much of the debate relates to the protection of sensitive species, such as the desert tortoise (FWS, 2002a). See the online document [Species Profile for Desert Tortoise](#) for more information. This act reallocated over 6.3 million acres administered by BLM to the jurisdiction of the National Park Service (NPS). Of this amount, nearly 3.5 million acres were designated as wilderness. Another 1.2 million acres of land were added to Death Valley National Monument, which was re-designated as a national park. Another 234,000 acres were added to the Joshua Tree National Monument, also re-designated as a national park. Additionally, the new 1.4 million acre Mojave National Preserve was created. National park Wilderness Areas were also established for Death Valley, Joshua Tree, and Mojave.

Concerns over deserts began in the 1980s: To address concerns over impacts of off-road vehicles, mining, grazing, and other activities, the U.S. Congress established the 25 million acre California Desert Conservation Area in 1976. Congress directed BLM to develop a management scheme protecting the resource values on the 12.1 million public acres under its jurisdiction in the region. BLM undertook a number of initiatives based on this direction including the 1985 designation of a 1.5 million acre East Mojave National Scenic Area.

Despite its efforts, BLM continued to be criticized over its management of the desert ecosystem. In 1986, U.S. Senator Alan Cranston introduced the first version of the California Desert Protection Act.

Under this legislation, areas open to off-road vehicles and mineral exploration have decreased. Significant private lands within the federal land boundary (private in-holdings) are being acquired to facilitate unified management of the desert ecosystem. Grazing allotments remain stable, though issues relative to the endangered desert tortoise remain. See the online document [Appendix C: Draft Land Protection Plan for Mojave National Preserve](#) for more information.

Acquisition of desert in-holdings: When the California Desert Protection Act was passed in 1994, railroad lands comprised the largest single private in-holding. In 1864, Congress had given the Southern Pacific Railroad every other section of land in a 50-mile wide path along the current routes of Interstate 40 and Route 66 in order to foster development of the American West. The company owning the former railroad lands began selling those existing within the Mojave National Preserve in 1998. Under an agreement announced in December 1998, the company agreed to transfer a total of 405,000 acres to the federal government within and around the lands protected by the 1994 act. Although the lands were valued at \$61.6 million, the company agreed to an acquisition price of \$45 million. The acquisition was completed in 2000 and was purchased by \$15 million in federal funds and \$30 million in funds from the Wildlands Conservancy (Lazaroff, 2000).

CALFED Bay-Delta program

State and federal agencies, including the NMFS, signed a framework agreement in June 1994 to develop water quality standards and programs to protect the Bay-Delta. The agreement also included the coordination of State Water Project (SWP) and Central Valley Project (CVP) operations in the Bay-Delta. The common goal was to bring about a long-term Bay-Delta solution that would address ecosystem restoration as well as other objectives.

This framework agreement led to the Bay-Delta Accord. The Bay-Delta Accord was signed in December 1994 by a diverse group of state and federal agencies, water agencies, and environmental organizations. The accord set out specific interim (three-year plan) measures for environmental protection, including the protection of Central Valley anadromous salmonids. The CALFED Program, which began in June 1995, is charged with developing a long-term, Bay-Delta solution. The 1994 Bay-Delta Accord has been extended twice.

A variety of environmental protection measures are detailed in the Bay-Delta Accord. These include: 1) control of freshwater outflow in the Delta (Category I measures); 2) regulation of water project operations and flows to minimize harmful environmental impacts of water exports (Category II measures); and 3) implementation of projects that address non-flow related factors affecting the Bay-Delta ecosystem (Category III measures) including upper watershed issues that relate to forestry and rangelands.

The total cost for implementing the Ecosystem Restoration Program Plan (ERPP), a component of the CALFED program has been estimated at \$1.5 billion. About half of that money should be available through State Proposition 204 bonds (passed in 1998) and expected federal appropriations. Many of the Category I and II measures identified in the agreement were implemented by a Water Quality Control Plan adopted by SWRCB in 1995. Efforts were also initiated to fund and implement Category III non-flow projects beginning in 1995. Proposition 204 provided additional funding for a substantial number of upper watershed projects. The U.S. Department of the Interior (DOI) as well as other federal agencies have provided funds for many of these measures and projects under the ERPP.

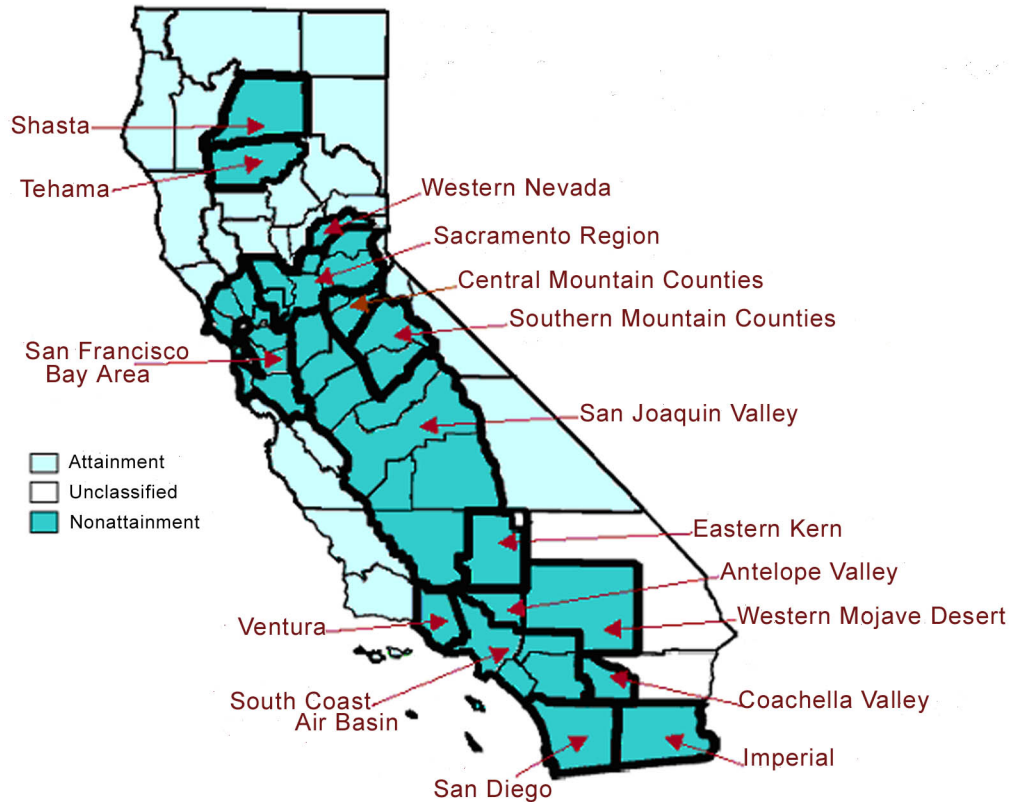
Stronger air quality influence

Ozone and particulate matter are significant air quality pollutants in forest and rangeland areas of California. See the Assessment document [Air Quality Influences](#) for more information. Ozone is produced from sources typically urban areas and transported to more rural areas. Ozone has adverse affects on both people and vegetation. Compared to urban areas that experience high peak periods of ozone, rural areas typically are exposed to ozone over longer periods at lower exposures. Health studies indicate that prolonged exposure at lower levels causes adverse health impacts such as lung inflammation and a higher rate of asthma attacks (Velasco, 2000a). Particulate matter less than 10 microns and 2.5 microns in size is a serious pollutant; it comes from a variety of sources, such as dust, outdoor burning, and wood stoves. Elevated particulate matter has also been related to several adverse health effects.

The U.S. Environmental Protection Agency (EPA) has adopted separate air quality standards to measure ozone both over longer periods (eight-hour standard) and at peaks (one-hour standard) (EPA, 2002). Under State law, Air Resources Board (ARB) also has set a one-hour ozone standard. Analyses of ozone data suggest that there will continue to be difficulty in complying with the existing state one-hour ozone standard and the pending federal eight-hour standard (California Air Resources Board (ARB), 2000).

Amendments to the federal CAA (under the Transportation Equity Act for the 21st Century) set timeframes for states to recommend and the EPA to approve area designations for the eight-hour ozone standard. States were directed to recommend non-attainment area boundaries by July 1999 and the EPA was directed to make final designations by July 2000. Litigation has slowed these implementation dates, but ARB submitted final recommendations for non-attainment boundaries in March 2000 (Velasco, 2000b). Figure 3 portrays California county designations based on ARB recommendations. These recommendations are based on the belief that the areas will not meet the eight-hour federal ozone standard.

Figure 3. Recommended area designations for the federal eight-hour ozone standard



Source: Velasco, 2000b

Final designation by the EPA is significant, especially to rural California counties. It means that states must develop and submit a plan detailing how they will attain the standard. New stationary pollutant sources must achieve the lowest possible emission rates and obtain offsetting emissions (actions promoting pollution reduction by others). Transportation plans must also conform to the standards. Many rural California counties do not have the technical expertise to formulate and implement this type of planning; therefore, ARB will need to provide assistance. In addition, there will be potential impacts on land uses that produce ozone such as timber harvesting, prescribed burning, recreational vehicle uses, and other commuting activities.

Impact of air quality reduction programs in the San Joaquin Air Basin: The San Joaquin Air Basin includes the counties of San Joaquin, Fresno, Kings, Madera, Merced, Stanislaus, Tulare, and parts of Kern. It is under the control of the San Joaquin Valley Unified Air Pollution Control District. See the [District Home Page](#) for more information. Surrounding mountains trap airborne pollutants near the valley floor causing air pollution to accumulate in the valley. In addition, summer temperatures trigger the formation of ground-level ozone. The EPA has classified the San Joaquin Valley as severe non-attainment because of its ground-level ozone levels and particulate matter less than 10 microns in diameter (PM10 standard). Failure to meet these standards can result in loss of federal revenues and other restrictions. ARB has also classified the valley as severe non-attainment according to the California ozone standard and non-attainment according to the State's PM10 standard (San Joaquin Valley Air Pollution Control District, 2002).

The bulk of pollutants are locally derived and come from motor vehicles; about 12 percent of the pollutants come from outdoor burning and use of wood stoves (San Joaquin Valley Air Pollution Control District, 2001a). At the same time, transport of ozone to the San Joaquin from the Bay Area remains an issue. District regulations control many activities, including smoke management and use of prescribed fire (San Joaquin Valley Air Pollution Control District, 2001b). The district charges a fee of \$5.00 per acre of a prescribed burn to administer its smoke management program (San Joaquin Valley Air Pollution Control District, 2001c).

Past strategies addressing ozone pollution emphasized emission control in urban and suburban areas. The federal EPA and ARB are now developing more regional approaches that focus on emissions from rural sources and on the relative shares of interbasin transfers (ARB, 2000). In order to address worsening ozone contributions from new and previously existing air basin linkages, ARB requested its staff in mid-2001 to evaluate additional approaches that might control both downwind and upwind ozone emissions. These approaches include the following:

- upwind transport districts adopt all feasible measures to mitigate air pollution impacts downwind;
- implement an improved smog check in the San Francisco Bay area;
- establish a mitigation fee bank to fund emission reduction measures in downwind districts; and
- change the way new sources of ozone are evaluated when a downwind area has a more severe classification than the upwind area (ARB, 2001).

Findings on development of a broader scientific, watershed-based approach

During the last decade, almost universal recognition (though not necessarily political acceptance) has emerged concerning the importance of ecosystem inter-relationship with people. This more holistic approach to analyzing and managing forests and rangelands has loosely evolved and is termed “ecosystem management.” It adopts the view that ecosystems are linked at various scales and time frames, and that management should take account of these linkages as much as possible. The basic unit of analysis is often the drainage basin or watershed and its relation to fish and wildlife habitats. The goals of the process are to: 1) assess the condition of the watershed and related resources; 2) determine what is needed to restore or maintain watershed health; and 3) formulate management decisions based on watershed goals.

In the early 1990s, scientists emphasized this approach by evaluating federal land management practices in the Pacific Northwest. Concentrating on the creation of large reserves, wide riparian protection areas, and connectors to upslope habitats, these broad scale ideas have been applied by federal agencies in two major efforts on national forests in California with far reaching impacts. These efforts are

the NWFP (Option 9) and the SNEP, as well as the following variations. See the Assessment document [Legal Framework](#) for more information.

This approach is not new. The NPS restructured its management along ecological lines following a 1963 scientific committee report chaired by Dr. A. Starker Leopold, a U.C. Berkeley professor of wildlife. Overall, NPS altered its management approach to reflect a picture of primitive America. New emphasis was given to environmental interpretation, which stressed ecological relationships, resulted in special environmental education programs for school classes, and promoted the nation's growing environmental awareness (Mackintosh, 1999).

Broader approaches have also been applied to private forests and rangelands. They have primarily originated in:

- cumulative impacts analyses to meet Forest Practice Rules (FPRs) and CEQA on private and state forest lands;
- BOF rules requiring consideration of sustained growing and harvesting of timber;
- planning for fish restoration activities;
- development of plans that address threatened and endangered species;
- adoption of the Watershed Management Initiative (WMI) by SWRCB and formulation of planning documents that specify implementation of TMDLs by Regional Water Quality Control Boards (RWQCBs);
- ongoing watershed research; and
- watershed assessment activities.

Watershed management was a catch phrase of the 1990s, and the approach caught on quickly in California, providing an opportunity to apply science in practical ways (McClurg, 1995). The first attempts included a few selected watershed assessments and rehabilitation plans such as sediment reduction efforts in the Upper Feather River and in sensitive watersheds of the Klamath and Trinity River basins. Various watershed groups collected data and conducted watershed analyses at different levels of sophistication and success.

The French Creek watershed story: Within the Scott River sub-basin of the Klamath River lies a small, granitic watershed of about 21,000 acres (32 square miles) known as French Creek. Its fragile, decomposed granite soils make it prone to delivering sand-sized sediment to the stream when disturbed, impacting the quality of salmon and steelhead habitat in the creek and the river downstream. Because of timber harvesting activities on private and public lands, cumulative watershed effects (CWEs) were becoming a scientific as well as a political issue in the late 1980s.

A concurrent initiative by the BOF and FRAP to explore decision-making strategies in mixed ownership watersheds led to the selection of French Creek as a case study. A Watershed Advisory Group (WAG) of 13 stakeholders was formed in 1990, with U.C. Davis Extension serving as facilitator (Sommarstrom, 1994). The first goal was to develop a cooperative, ongoing planning process for resource management across multiple ownerships. Another goal was to reduce the sediment yield into French Creek and also to reduce the potential for negative CWEs.



French Creek, Klamath bioregion, California. Photo courtesy of Marc Hoshovskv. DFG.

The assessment determined that roads were the primary human-made source of sediment and contributed to over 60 percent of the watershed's average annual supply. As a result, the WAG developed a Road Management Plan in 1992 to reduce sediment sources from the 74 miles of road on granitic soils. Over 32 miles were treated by 1995 with methods such as outsloping and road rocking. The WAG directed that volume of those pools filled with sediment be measured as one indicator of habitat quality, a method called V-star. Between 1992 and 1995, pool sediment decreased by 75 percent in the stream. Because of such an impressive water quality improvement, the WAG became one of the recipients of the first annual "CF Industries" National Watershed Award in 1996. To date, the improvements in pool sediment have been sustained, with a minor increase after the 1997 flood. Currently, the granitic sedimentation is considered to be at natural background levels.

Other methods have evolved as foresters have prepared cumulative impact analyses as part of THPs. CEQA requires the consideration of cumulative effects, and FPRs have incorporated this requirement (CDF, 2002). See the online document [Forest Practice](#) for more information. After reviewing available methodologies, the BOF has settled on the narrative approach now contained in the rules. The USFS has developed a quantitative approach in its attempt to meet similar National Environmental Policy Act (NEPA) requirements. Both the USFS and CDF have attempted to improve studies of cumulative effects at the watershed level using watershed assessments (Ice, 2001). However, a panel of university experts recently concluded that predicting CWEs quantitatively is still difficult (University of California Committee on Cumulative Watershed Effects, 2001). They suggested that the assessment of CWE risk was a more promising approach. See the Assessment document [Water Quality and Assessment](#) for more information.

Another factor motivating the use of science at the watershed level is the push by Congress and the



Sheep grazing, northern California.

EPA to reduce pollution from nonpoint sources. Nonpoint sources of water pollution are those that cannot be traced to a distinct source like a pipe or drain. Timber harvesting, agriculture, and grazing are often sources of nonpoint source pollution. The federal CWA requires that states list waters as impaired when they do not meet water quality standards. States are then mandated to establish how various sources contribute to standard violations, and to set limitations on the amount each source adds to future loads. These limits are referred to as TMDLs.

Most of California's north coast rivers in forests and rangelands were specified as impaired by SWRCB under the CWA (section 303(d)). More than 500 impaired waters require 800 TMDLs by 2014. To carry out a legal consent decree as well as a court-ordered schedule, the North Coast RWQCB and the EPA are collaborating to finish TMDLs for 20 river systems by 2011. For a list of waterbodies in the North Coast Regional Water Quality Control Board scheduled for TMDL implementation see [TMDL Schedule](#).

These TMDLs will commonly address sediment and temperature impairments. The applications of both the latest scientific knowledge and findings establishing quantifiable water quality targets are providing new analysis tools. The ultimate test, of course, will be whether the TMDLs actually fix the problem (Pitzer, 2001).

Findings on collaboration and cooperation

During the 1990s, agency collaboration and greater public and multi-stakeholder involvement became emphasized. Collaboration between agencies and agencies and landowners is not new in California. Agencies have long cooperated in fighting wildfires and other emergency events. Public comment and involvement are also formally required by the National Environmental Protection Act (NEPA), the Federal Advisory Committee Act (FACA), California Environmental Quality Act (CEQA), the California Administrative Procedures Act (CAPA), and other laws that govern agency decision-making. However, these mandated forms of public participation are different from collaborative processes in which agencies and other entities work together voluntarily. See the Assessment document [Public Involvement, Information and Education](#) for more information.

Coordinated Resource Management and Planning (CRMP) is a process between agencies and landowners at the local level that began voluntarily and informally in the early 1960s to help address public grazing issues. The effort has expanded and is now coordinated and promoted by 15 State and federal agencies within California. CRMP-type processes currently exist in both urban (e.g., San Francisquito Creek CRMP near Palo Alto) and rural settings (California CRMP TAC, 1996). Many collaborative groups are working together on ecosystem and watershed issues at the local level. The listing of species under the federal ESA has created an added incentive to participate in cooperative ecosystem management



Sacramento River, Butte County, California.

efforts (Yaffee et al., 1996). Community-based ecosystem management promotes collaboration since its premise is that human communities and natural ecosystems are interdependent and therefore communities need to fully participate in relevant decision-making processes (Gray et al., 2001).

Watershed collaborations are viewed as one form of community-based environmental protection or “collaborative conservation” (Brick et al., 2000). For the past decade, the EPA has been an enthusiastic promoter of the “watershed approach frameworks” in which both public and private sectors jointly address water quality problems (EPA, 1993). While regulations are still a major factor, the EPA recognizes the potential of this new approach to significantly restore, maintain, and protect water resources.

Similarly, the SWRCB has adopted the Watershed Management Initiative (WMI) to work cooperatively at the local level. State resource agencies are currently interested in promoting local watershed partnership efforts through a Joint Task Force on Watershed Management and the development of a joint strategic plan for all departments (California Resources Agency and SWRCB, 2002). See the online document [Joint Task Force on Watershed Management](#) for more information.

This movement towards localized resource governance and problem-solving using watersheds as the theme has become popular countrywide, but particularly so in the West (Kenney et al., 2000 and Brick et al., 2000). It does not appear that any single event or stimulus created this proliferation of local watershed collaborations. Kenney and other social researchers at the University of Colorado propose that two important factors precipitated this trend: 1) the principle of regionalism as a basis for resource management and environmental-human integration; and 2) the growing societal preference for strategies of governance and problem-solving that stress collaborative processes (Kenney et al., 2000). This increased role of collaboration and consensus in western resource policy and politics can also be viewed as a “long-term experiment in shaping a more effective political culture, revitalizing the role of citizenship, and improving existing institutional arrangements for making public policy” (McKinney, 2000).

In reality, agencies can be resistant to change and power sharing; therefore collaboration is not easy. Collaborative efforts may confront existing approaches to decision-making that are centralized and less flexible. The challenge to resource policy-makers has been to facilitate the means of finding common goals based on geographic regions and similar interests. In situations where there is both common understanding of a problem and the urgency to find a solution, collaboration can succeed. This scenario recognizes that individual preferences are subject to the social, cultural, political, and personal context in which people live, or “communities of place.” People tend to support decisions in which they play a part. Furthermore, their involvement in public participation must go beyond mere “tokenism” (Duane, 1999).

However, most natural resource management agencies remain primarily staffed by professionals trained in the traditional approach of resource-management-by-experts-only. As illustrated by a recent evaluation of resource management agencies, this method of top-down decision-making does not allow a great degree of collaboration (Wondolleck and Yaffee, 2000). Furthermore, agencies can possess conflicting objectives and structures that make cooperation difficult. Inflexible administrative policies and

“red tape” are frequent obstacles to collaboration with other agencies and the public. In addition, a lack of time, money, and personnel often hinder improvements in this situation.

Despite these obstacles, many examples show that cooperation between agencies and between agencies and the public is possible. In most cases, a governmental role is essential to successful local watershed approaches, particularly if plans and solutions proposed by collaborative groups are to be implemented (Born and Genskow, 1999).

Examples of cooperation between federal agencies

Cooperation between federal agencies arises from several processes: by law, Executive Order (EO), Memorandum of Understanding (MOU), Initiative, and cooperative experimentation (Table 3).

Table 3. Types of federal interagency cooperation

Source of cooperation	Example	Type of cooperation
Statute	NEPA	Requires multiple agency comments before project decision
	Federal ESA	Requires consultations if threatened or endangered species involved
	Fish and Wildlife Coordination Act	Requires all federal agencies to consult with appropriate fish and wildlife agency for activities affecting any body of water, such as federal CWA permits
EO/policies	Flood plains and wetlands (EOs 11988 and 11990)	Requires federal agencies to avoid, to the extent possible, short and long term impacts due to flood plain occupancy or modification
	Environmental justice (EO 12898)	Requires federal agencies to incorporate environmental justice in their missions by addressing disproportionately high environmental impacts their programs, policies, and activities have on minority, low-income populations
Cooperative agreements	Memorandum of Agreement, federal ESA Section 7 Programmatic Consultations and Coordination (8/30/2000)	Sets framework for endangered species consultations between agencies such as BLM, USFS, NMFS, and FWS
	Unified Federal Policy for Ensuring a Watershed Approach to Federal Land and Resource Management	Provides that federal agencies utilize watershed approaches.
Executive initiative	NWFP	Followed multi-agency review of forests on California north coast and Pacific northwest
	SNEP	Followed multi-agency review of federal lands in Sierra
Common goals	Assessment of Southern California Forests	Multi-team effort to assess southern California forests and rangelands
Fund sharing	Five Star Restoration Grant Program	EPA and NMFS developed joint program to support community stream bank and wetland restoration

Examples of collaboration between State agencies

Collaborations between state agencies are similar to federal categories (Table 4).

Table 4. Types of State interagency cooperation

Source of cooperation	Example	Type of cooperation
Statute	CEQA	Sets lead and responsible agency framework and requires comments from other agencies
	California ESA	Requires that other state agencies consult with DFG
	Forest Practice Act multidisciplinary review teams	Requires multidisciplinary review of THPs
EO/policies	BOF and DFG joint policies on hardwoods, fire, and coho salmon	Establish common policies for hardwoods, fire, and protection of coho salmon
Cooperative agreements	Water Quality Management Agency agreement between CDF and SWRCB	Sets BOF responsible for implementation of BMPs on private and state forest lands
Executive initiative	North Coast Watershed Assessment Program (NCWAP)	Establishes effort by six State agencies to assess North Coast watersheds
Common goals	Research on Jackson State Demonstration Forest	CDF and DFG jointly review impacts of timber harvesting on fish resources
Fund sharing		

Although no formal evaluations have been done, the success of these interagency collaboration efforts has varied.

Examples of collaboration between State and federal agencies

Table 5. Types of State-federal interagency cooperation

Source of cooperation	Example	Type of cooperation
Statute	Forest Legacy	Joint program to help conservation of forest lands
	National Historical Preservation Act	Establishes program to identify and protect historical resources
	Natural Communities Conservation Planning Act	Sets structure within which agencies can develop this kind of plan
EO/policies	EO 13057: Federal Actions in the Lake Tahoe	Establishes federal interagency partnership in Lake Tahoe ecosystem and facilitates mutual collaboration with other agencies
Cooperative agreements	California Biodiversity Council	Establishes council to coordinate agency concerns over biodiversity
	Fire Protection Mutual Aid and related agreements	Establish relationship in firefighting efforts, mutual aid, cost sharing, and prefire efforts
	CALFED Framework Agreement (1994)	Establishes a State-federal framework addressing water quality and quantity issues in Bay-Delta, watersheds of origin, and areas of water use pertaining to water supply provided by SWP and CVP
	California CRMP Council - MOU	Sanctions coordinated resource planning in the State through the CRMP process at the local level. MOU signed by seven State and seven federal agencies
Executive initiative	North Coast Watershed Assessment Program	Establishes six-agency effort to assess North Coast watersheds

Examples of cooperation between governmental agencies and the public

Another kind of collaboration occurs between agencies and the public. These partnerships go beyond comments offered by the public regarding various State and federal projects (Table 6).

Table 6. Types of public and private cooperative efforts

Source of cooperation	Example	Type of cooperation
Statute	FACA	Sets the conditions for use of advisory committees by federal agencies
	QLG Act	Established the framework and goals for the QLG and the USFS
	Federal EPA	Education and technical assistance programs
Common goals	SWRCB and RWQCB Management Outreach	Develops local plans to improve water quality
	California Fire Safe Council (FSC)	Council formulated to improve common efforts that lessen the impact of wildfire
	SWRCB, CDF, ARB, DFG	Grants for habitat improvement, improved forest management, and urban forestry
EO/policies	EO 13007	Facilitates preservation of Native American religions and provides access to sacred and religious sites on federal property; provided for the formal development of protocols between BLM and all federally recognized tribes that consider California to be their homeland
Cooperative agreements	CRMP Plans	Landowners and agencies work together on a voluntary basis to achieve common goals, such as range improvements, soil conservation, or watershed restoration.
Executive initiative	BLM and USFS Public Outreach Programs	Creates programs at national forest and BLM districts levels to involve local citizens
Fund sharing	EPA, USFS, BLM, FWS, NRCS, and other grants	Grants cover wide range of forest and rangeland projects, as well as urban forests

A number of these collaborations have worked well. Interagency examples include the CRMP Council, gnatcatcher NCCP program, and CALFED. Most of these multi-stakeholder collaborations are at the watershed or project level. Successful collaborations can occur when state or federal agencies provide technical support and funding while minimizing their role as stakeholders at this level. For example, EPA cites the rural Panoche-Silver Creek Watershed CRMP Program in the San Joaquin Valley as one of its watershed success stories. This CRMP effort focuses on flood, erosion, and sedimentation concerns to improve water quality and wildlife habitat (EPA, 2000).

Watershed councils or partnerships improve the status quo condition (Huntington and Sommarstrom, 1999). Relationships between agencies and the watershed community were definitely improved through these collaborative processes, as indicated by better cooperation, coordination, and communication. In an evaluation of regional and local watershed partnerships in California and Washington, U.C. Davis researchers found that primary success factors included adequate time (duration of four years or more), interpersonal trust, and technical information regarding the watershed (Leach et al., 2001). Older partnerships had achieved several benchmarks of success including agreements



Community watershed activities, Arroyo Seco, Los Angeles County, California.

on proposed restoration projects, implementation of restoration projects, and monitoring of project effectiveness.

Other collaborations have been more difficult. Efforts involving federal or state agencies may include tension between agency interests and those of local stakeholders, as well as among stakeholders themselves. One reason for this tension has been that policies of federal resource agencies originating from their headquarters in Washington D.C. Hence, national legislative and budget considerations as well as pressure applied by national interest groups affect the ways in which federal agencies collaborate in California. The fact that national environmental and administrative process laws control how federal agencies collaborate is another source of tension. These federal laws are subject to process requirements under FACA, the ESA, CWA, and CAA. The requirements and considerations of these acts are often time consuming and not well adapted to collaboration at the local level.

Collaborative difficulties have arisen in several venues. For examples, the northern spotted owl, California spotted owl, and coastal salmon. Also difficult is the involvement of the State in amendments to national forest regulations, the implementation of the Quincy Library Group (QLG) Act, and the long delay in implementing the National Forest Planning Process. In one evaluation of a watershed partnership failure in California, the group apparently disbanded for several reasons: 1) an inability to resolve conflicts over values and ideology; and 2) a perception by property owners that the effort involved too many governmental representatives and environmental advocates (Woolley and McGinnis, 1999). The establishment of the multi-stakeholder Klamath Bioregional Council in northwestern California in the early 1990s failed partly due to geographic and social scale discrepancies, but also because the field office managers in most of the agencies involved resisted cooperation (Thomas, 1999). The researcher's conclusion was that centralized agencies (those that require field staff to clear all decisions through the hierarchy) tend to be unresponsive to local communities and collaborative processes.

In addition, a number of rural communities and landowners believe that the federal and State governments have supported approaches costly to private owners, including the loss of harvest commodities and use of private lands. Alternatives that identified solutions using the least amount of private resources and that spread the costs equitably (or at least acceptably) among the federal government, California taxpayers, non-profit groups, and landowners have only been developed on a small scale.

Examples of collaboration at the local level

Across California, there are hundreds of local groups working on aspects of forests and rangelands including landowner, watershed, and restoration groups and Fire Safe Councils (FSCs). These groups have embarked on joint efforts such as HCPs, CRMP plans, NCCP programs, community fuel reduction plans, watershed rehabilitation plans, restoration projects, and other local cooperative conservation efforts. Even urban watersheds, such as the Arroyo Seco in Pasadena and the Santa Clara Basin in San Jose, are comprised of a significant percentage of public or private forests and rangelands in their headwaters.

The Watershed Project Inventory at the U.C. Davis Information Center for the Environment identified and surveyed over 700 groups in California that indicated involvement in watershed projects (Information Center for the Environment, 1997a). See the online document [Watershed Project Inventory](#) for more information. However, many of these groups are special interest or something other than collaborative. Most groups who use the CRMP process involve multiple, diverse stakeholders; although not all CRMP groups are primarily involved with watershed issues. It is difficult to establish by name those watershed groups that are collaborative and inclusive of stakeholders and those that are special interest and exclusive of those who can be involved. These efforts are denoted by many terms including partnerships, councils, advisory groups, initiatives, committees, programs, or forums. Table 7 represents a partial list of local watershed groups in California that appear to be collaborative partnerships. It is estimated that there are between 100 and 140 such local watershed partnerships in California representing varying levels of activity. The number varies each year due to group disbandment and new formation (Sommarstrom, 2002)

Local Resource Conservation Districts (RCDs), each guided by a locally elected board, often provide the connection between their traditional landowner clientele and the broader-based cooperative efforts of diverse stakeholders involved with restoration. Nearly all counties in California have at least one RCD (Table 7). A Watershed Coordinator Grant Program for RCDs was established under the 2000 state budget allocating \$2 million to fund watershed coordinators through the California Department of Conservation (DOC) (Table 8). California's investment in the 30 RCD-based coordinators reportedly aided the improvement of watershed health through restoration projects, education, and public and private sector involvement (DOC, 2002).

Table 7. Examples of local watershed partnerships and RCDs by county

County	Examples of local watershed partnerships (not a complete list)	Resource Conservation Districts
Alameda	Codornices Creek Watershed Restoration Action Plan / Santa Clara Basin WMI	Alameda County RCD
Alpine		Alpine County RCD
Amador		Amador County RCD
Butte	Cherokee Watershed Group	None
Calaveras		None
Colusa		Colusa County RCD/Yolo County RCD
Contra Costa	Marsh Creek Watershed CRMP	Contra Costa RCD
Del Norte	Smith River Advisory Council	none
El Dorado	American River Watershed Group / Upper Truckee River CRMP	Tahoe RCD, El Dorado County RCD, Georgetown Divide RCD
Fresno	Arroyo Pasajero CRMP	Firebaugh RCD, James RCD, Navelencia RCD, Panoche RCD, Poso RCD, Sierra RCD, Tranquility RCD, Westside RCD
Glenn		Glenn County RCD
Humboldt	Humboldt Bay Watershed Advisory Committee	Humboldt County RCD
Imperial		Coachella Valley RCD, Bard RCD, Palo Verde RCD
Inyo		Inyo-Mono RCD
Kern		Antelope Valley RCD, Eastern Kern County RCD, Western Kern RCD, Buena Vista RCD, Kern Valley RCD, Pond-Shafter-Wasco RCD, Tehachapi RCD
Kings		Excelsior/Kings River RCD, Tulare Lake RCD
Lake	Clear Lake Basin Watershed Management Project / Middle Creek CRMP / Lake Pillsbury CRMP / Scott Creek Watershed CRMP / Schindler Creek CRMP / Big Valley CRMP	East Lake RCD, West Lake RCD
Lassen		Fall River RCD, Honey Lake Valley RCD, Pit RCD, Sierra Valley RCD
Los Angeles	Los Angeles-San Gabriel Rivers Watershed Council / Arroyo Seco Watershed Restoration Feasibility Study / Topanga Creek Watershed Council / Malibu Creek Watershed Council	Antelope Valley RCD, Santa Monica Mountains RCD
Madera		Chowchilla-Redtop RCD, Coarsegold RCD, Columbia RCD, Madera RCD
Marin	Tomaes Bay Watershed Council	Marin County RCD
Mariposa	Upper Merced River Watershed Council	Mariposa County RCD
Mendocino	Garcia River WAG / Upper Eel Watershed Forum / Forsythe Creek WAG / Navarro River Watershed Advisory Committee	Mendocino County RCD
Merced	Merced River Stakeholders Group / Watershed Partnership	East Merced RCD, Grassland RCD, Gustine-Romero RCD, Los Banos RCD, San Luis RCD
Modoc	Pit River Watershed Alliance / Surprise Valley Watershed CRMP Group	Central Modoc RCD, Fall River RCD, Goose Lake RCD, Lava Beds RCD, Pit RCD, Surprise Valley RCD
Mono		Inyo-Mono RCD, Mono County RCD
Monterey	Carmel River Watershed Council	Monterey County RCD,
Napa	Huichica Creek Watershed Enhancement Plan CRMP	Napa County RCD
Nevada	Yuba Watershed Council / Truckee River Watershed Council / American River Watershed Group	Nevada County RCD
Orange	Santa Ana Watershed Program / Santa Ana Watershed Group / Aliso Creek Watershed Council	
Placer	American River Watershed Group / Truckee River Watershed CRMP Council	Placer County RCD, Tahoe RCD
Plumas	Upper Feather River Watershed CRM	Feather River RCD, Sierra Valley RCD
Riverside	Santa Ana Watershed Program / Santa Ana Watershed Group / San Jacinto Watershed Council	Riverside-Corona RCD, Coachella Valley RCD, East Valley RCD, Inland Empire RCD, Palo Verde RCD, San Jacinto Basin RCD, Elsinor-Murrieta-Anza RCD
Sacramento	Cosumnes River Task Force CRMP	Sloughhouse RCD, Lower Cosumnes RCD, Florin RCD
San Benito		San Benito RCD
San Bernardino	Santa Ana Watershed Program / Santa Ana Watershed Stewardship Group	Mojave Desert RCD, East Valley RCD, Inland Empire West RCD
San Diego	Los Penasquitos Lagoon Enhancement Program/San Luis Rey Watershed Council	Greater San Diego RCD, Mission RCD, Upper San Luis Rey RCD
San Francisco		none
San Joaquin	Panoche-Silver Creek CRMP	San Joaquin County RCD
San Luis Obispo	San Luis Obispo Creek Watershed Forum/Arroyo Grande Watershed Forum	Coastal San Luis RCD, Upper San Luis Rey RCD
San Mateo	Santa Clara Basin WMI / San Francisquito Creek CRMP / Pescadero-Butano Creek CRMP	San Mateo County RCD
Santa Barbara	Carpinteria Creek Restoration Coalition / Santa Maria Watershed Group	Cachuma RCD
Santa Clara	Santa Clara Basin WMI	Guadalupe-Coyote RCD, Loma Prieta RCD
Santa Cruz	San Lorenzo Watershed Caretakers CRMP / Scotts Creek Watershed Council / Soquel Creek Watershed CRMP / Pajaro River Watershed Council CRMP	Santa Cruz County RCD
Shasta	Middle Creek CRMP / Sulphur Creek CRMP	Fall River RCD, Western Shasta RCD
Sierra	Yuba Watershed Council / Truckee River Watershed CRMP Council	Feather River RCD, Sierra Valley RCD
Siskiyou	Scott River Watershed Council / Shasta Valley CRMP / Salmon River Restoration Council / French Creek WAG	Butte Valley RCD, Fall River RCD, Lava Beds RCD, Shasta Valley RCD, Siskiyou RCD
Solano		Dixon RCD, Napa County RCD, Suisun RCD, Ulatris RCD
Sonoma	Russian River Watershed Council / Petaluma River Watershed Group	Southern Sonoma County RCD, Gold Ridge RCD, Sotoyome RCD
Stanislaus		West Stanislaus RCD, East Stanislaus RCD, Gustine-Romero RCD
Sutter		Sutter County RCD
Tehama	Cottonwood Creek Watershed Group / Battle Creek Watershed Conservancy	Tehama RCD, Vina RCD
Trinity	South Fork Trinity CRMP/ Upper Trinity River CRMP / Mid-Trinity River CRMP	Trinity County RCD
Tulare	Kaweah-Tule Watershed Management Council	Tulare County RCD, Kern Valley RCD
Tuolumne		none
Ventura		Ventura County RCD, Antelope Valley RCD
Yolo	Cache Creek Watershed Stakeholders Group CRMP	Yolo County RCD, Dixon RCD
Yuba	Yuba Watershed Council	Yuba County RCD

Table 8. State funding for local watershed activities

State program with significant watershed elements	Amount for 2001-02 (millions of dollars)
CALFED Ecosystem Restoration	*100.0
CALFED Watershed Management Program	20.0
Coastal Conservancy – Southern California Wetland Recovery Program	7.0
Coastal Conservancy – Watershed Projects	5.0
DFG – SB 271 and Proposition 13 Fishery Restoration Grants Program	20.5
DOC – RCD Watershed Coordinator Grant Program	2.0
California Department of Water Resources (DWR) – Urban Streams Restoration Grant Program	2.0
California Resources Agency – Coastal Grant Program	1.5
California Resources Agency – Coastal Impact Assistance Program	1.7
California Resources Agency – Regional Coastal Watershed Coordinators	0.2
SWRCB – Nonpoint Source Program – 319(h)	5.3
SWRCB – Proposition 13	20.0
SWRCB – Proposition 204	15.0
SWRCB – 205(j)	0.6
Total	200.8

**only a portion allocated for local efforts*

Source: California Resources Agency and SWRCB, 2002

Multiple state programs fund local watershed activities, including assessment, planning, implementation, monitoring, outreach, and operational support. However, the majority of the available funding is reserved for project implementation. Many federal, local, and private sources of funding also benefit watershed partnership efforts.

Approximately 90 local FSCs exist under the umbrella of the California FSC (California FSC, 2002). A local FSC is a coalition of public and private sector organizations and residents working together to reduce the threat of wildfire in their community. Most counties contain at least one FSC while some include several (Table 9).



Creating a 30-foot defensible zone around houses can save them. Photo courtesy of the California FSC.

Table 9. Local Fire Safe Councils in California by county, 2002

County/council name	County/council name
Alameda/Contra Costa	Placer
Diablo FSC	Alta FSC
Orinda Fire Safe Committee	Foresthill Area FSC
Amador	Greater Colfax Area FSC
Amador County FSC	Iowa Hill FSC
El Dorado FSC	Mountain Area FSC
Butte	Placer Hills FSC
Butte County FSC	Plumas
Cohasset Community Association	Almanor Basin FSC
Forest Ranch Preservation Alliance	Plumas County FSC
Oroville Community Association	Riverside
Yankee Hill FSC	Mountain Communities FSC
Del Norte	Riverside Ranger Unit
Del Norte FSC	Southwest Riverside County FSC
Fresno	San Bernardino
Highway 168 FSC	Mountain Rim FSC
Humboldt	Crest Forest Chapter
Lower Mattole FSC	Green Valley Chapter
Orleans / Somes Bar FSC	Lake Arrowhead Chapter
Willow Creek FSC	Running Springs Chapter
Inyo / Mono	Carbon Canyon FSC
Aspendell FSC	Lytle Creek FSC, Inc.
Benton FSC	Oak Glen FSC
Eastern Sierra Regional FSC	San Diego
Pine Glade FSC	San Diego County FSC
South Fork Bishop Creek FSC (INYO)	San Diego Ranger Unit
Wheeler Crest FSC	San Luis Obispo
Kern	San Luis Obispo County Community FSC
Kern River Valley FSC	San Mateo
Lake	San Mateo Fire Safe Committee
Lake County FSC	Devonshire Canyon Fire Safe Committee
South Lake FSC	Half Moon Bay Coastside Foundation
Lassen	Santa Barbara
Day Bench FSC	Santa Barbara County FSC
Janesville FSC	Santa Clara
Lassen County FSC	Santa Clara County FSC
Tionesta Basin Advisory Group	Santa Cruz
Los Angeles	Santa Cruz County FSC
LA County FSC	Sierra
Monrovia FSC	Sierra County Fire Safe and Watershed Protection Council
Topanga Citizen's Firesafe Committee	Shasta / Tehama
Madera	Cottonwood Creek Watershed FSC
Eastern Madera County FSC	Shasta County FSC
Madera Mariposa Merced Ranger Unit	Shingletown Community Fire Safe
Marin	Tehama County FSC
Fire Safe Marin	Siskiyou
Mariposa	Copco Lake / Bogus FSC
Madera Mariposa Merced Ranger Unit	French Creek FSC
Mariposa County FSC	Lake Shastina FSC
Mendocino	McCloud FSC
Mendocino County Fire Prevention Officers Association	Salmon River FSC
Modoc	South Yreka FSC
Modoc FSC	Sonoma
Monterey	Fire Safe Sonoma County
Big Sur FSC	Trinity
Monterey FSC	Trinity County FSC
Nevada	Tulare
FSC of Nevada County	Tulare County FSC
Orange	Tuolumne / Calaveras
Greater Laguna Coast FSC	Tuolumne Calaveras Ranger Unit
Inter Canyon FSC	Tuolumne / Calaveras FSC
Mission Viejo FSC	Ventura
Orange County FSC	Ventura County FSC
	Yuba
	Yuba County Fire Safe and Watershed Council

Source: California FSC, 2002

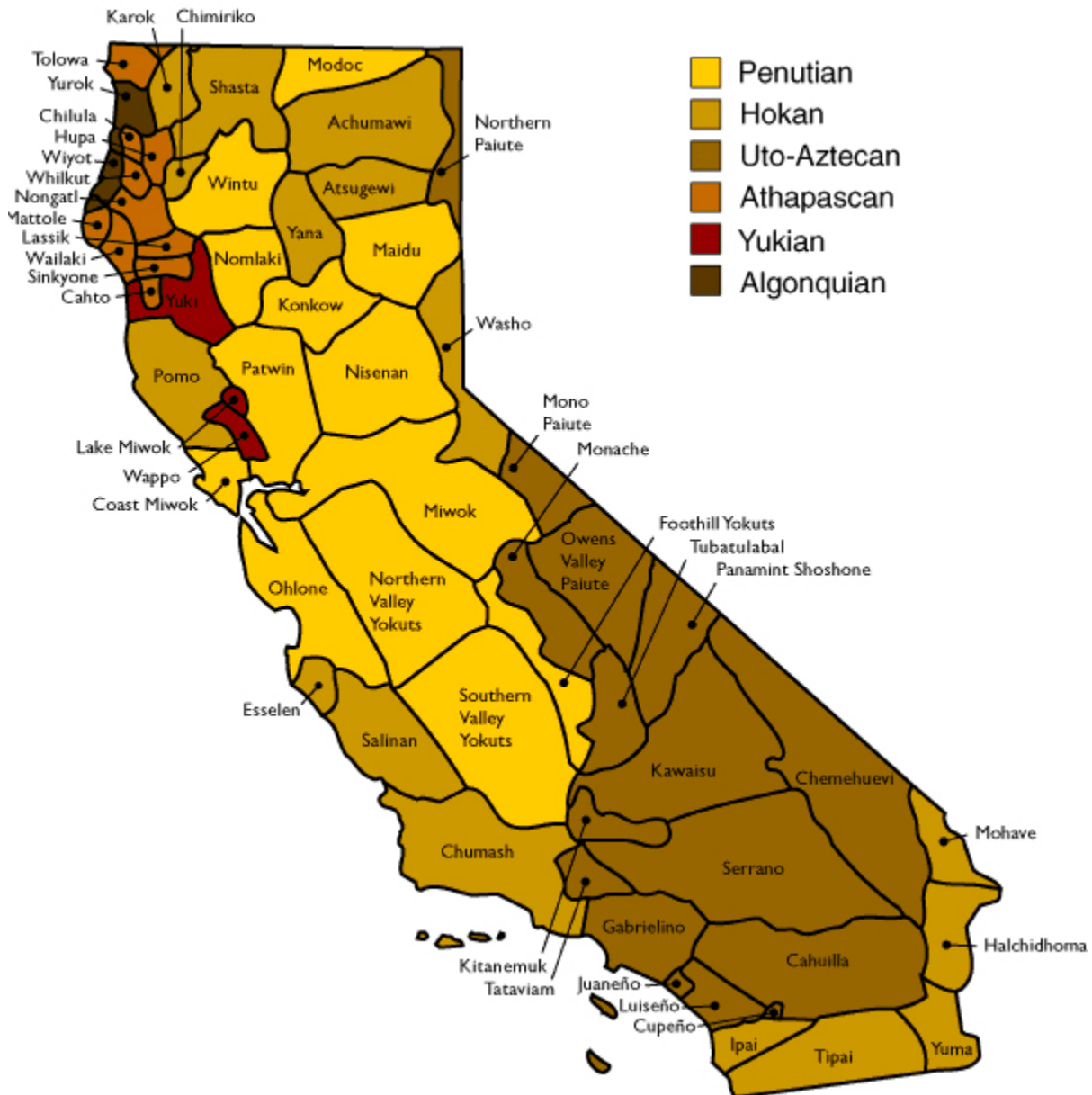
Counties that apparently do not have official FSCs include Alpine, Colusa, El Dorado, Glenn, Imperial, Kings, Merced, Napa, Sacramento, San Benito, San Francisco, San Joaquin, Solano, Stanislaus, Sutter, and Yolo.

Examples of collaboration with Native Americans

California includes over 200,000 Native Americans. Approximately 310,000 Native Americans lived in the region prior to 1700 (NPS, 2001). There are 105 federally recognized reservations and a number of other unrecognized tribes (Figure 4).

The history of collaboration between Native American peoples is highly varied, as is cooperation with ranchers and forest landowners. Native Americans contribute a rich cultural tradition and concern regarding cultural, archaeological, and historic resources. These traditions and concerns are often very specific to the tribe in question. Additionally, the locations of sacred sites and materials used in tribal activities may exist on lands not owned by Native American peoples (California Native American Heritage Commission, 2002).

Figure 4. Cultural areas and languages of Californian Native Americans



Source: California Native American Heritage Commission (CNAHC), 2002

California contains a large number of culturally significant sites. In 1976, the California Native American Heritage Commission (CNAHC) was established to assist in preserving cultural and religious sites important to Native Americans. The CNAHC is composed of nine commissioners appointed by the Governor of California. At least five of the commissioners must be California Native American elders, traditionalists, or spiritual leaders.

The CNAHC has several responsibilities, one of which is to maintain the Sacred Lands Inventory File. Another is to act as a liaison between Native American peoples and other government agencies. The CNAHC works with federal and State agencies to encourage access to public lands for traditional

practices such as native plant collecting and performance of religious ceremonies. Region 5 of the USFS maintains a MOU with CNAHC to protect resources and areas important to California Indians. The USFS also maintains a Tribal Government Program that seeks to increase understanding, communication, and partnerships between the agency and tribes in the State (395.com, 2002). See the online document [California Indians and the Forest Service](#) for more information.

Similarly, BLM has developed MOUs with the CNAHC. It has also developed protocols with local Indian groups and conducted specific planning efforts on the Carrizo Plain and in the Santa Rosa Mountains National Scenic Area where Native American individuals and groups provided specific management advice. In turn, BLM has set aside portions of its lands as Indian collecting and harvesting areas and acted to protect sacred sites (BLM, 1998). See the online document [CAIB98-37 Sacred Areas](#) for more information. BLM also appoints Native Americans to its Resource Advisory Councils that work to advise district BLM managers.

In addition, both the NPS and California Department of Parks and Recreation (DPR) protect culturally significant areas and maintain significant interpretive programs. They have also developed examples of Native American villages and lifestyles as tools educating the urban public.

Collaboration between Native Americans and CDF has been an evolving process. In the mid-1980s, the courts required CDF to implement additional procedures facilitating the identification and protection of archaeological sites. For the last decade, BOF rules have required that proposed Timber Harvesting Plans (THPs) contain reviews of potential archaeological or cultural sites. If a possible site is found during operations, it is reported and avoided. Because of the implementation of this process, foresters have discovered, reported, and protected a substantial number of new sites during the last decade. Additionally, the BOF maintains a Native American Advisory Council composed of Native Americans and staff from CDF and CNAHC.

Perhaps the most unique example of collaboration exists between Native Americans themselves exemplified by the InterTribal Sinkyone Wilderness Council. This is a non-profit consortium of 10 federally recognized California Indian Tribes: Coyote Valley, Hopland, Pinoleville, Redwood Valley, Round Valley, Sherwood Valley, Potter Valley, Robinson, Hoopa, and Yurok. In 1984-86, the organization played an important role in expanding the Sinkyone Wilderness State Park. Furthermore, with the help of a private foundation (Lannan Foundation of New Mexico), the council created America's first ever Intertribal Indian Park. The goal is to build a living



Native American with Elderberry flute. Photo courtesy of Lake County Museum.

The InterTribal Sinkyone Wilderness Council played an important role in 1984-86 by expanding the Sinkyone Wilderness State Park and with the help of a private foundation created America's first ever Intertribal Indian Park.

model that incorporates traditional Indian land use practices with modern approaches to environmental restoration.

The land transaction was accompanied by an unusual conservation easement. The easement is held and monitored by the Pacific Forest Trust and is intended to guarantee a sustainable mature forest. It stipulates that the land may be used for ecotourism, a native plants nursery, and limited logging. The easement delineates the number of large redwoods per acre and prohibits the harvest of old growth as well as unsustainable uses of stream corridors, steep slopes, and spotted owl and marbled murrelet habitat (Lannon Foundation, 2002). See the online document [History of the Foundation](#) for more information.

Findings on the growth of land trusts as conservation vehicles and forces in forest and rangelands

While Californians maintain extremely diverse opinions regarding what they consider to be appropriate forms of forest and rangeland use and management, nearly all are supportive of conservation. This support is reflected in the growth of land trusts over the last decade. State and local funding for open space was extensive across the United States from 1998 through 2000. In 1998, voters approved 84 percent of 148 referenda providing approximately \$8.3 billion for open space protection. In 1999, voters approved 90 percent of 102 referenda authorizing more than \$1.8 billion for open space protection and in 2000 passed 174 of 209 ballot measures providing \$7.5 billion for land conservation (Land Trust Alliance, 2002a). See the online document [Voters Commit Nearly \\$1.7 Billion to Open Space](#) for more information. California voters reflected this attitude with the passage of Propositions 12 and 13 in March 2000 and Proposition 40 in March 2002.

While Californians maintain extremely diverse opinions regarding what they consider to be appropriate forms of forest and rangeland use and management, nearly all are supportive of conservation.

More than half of the nearly 2,000 land trusts nationwide were formed within the past 15 years. See the online document [Land Trust: Help Conserve Our Land and Natural Resources](#) for more information

According to the Land Trust Census, California included 132 land trusts in 2000 that protected 1.25 million acres.

(Land Trust, 2002b). According to the Land Trust Census in 2000, California ranked first in total acres that included 132 land trusts and protected 1.25 million acres (Land Trust Alliance, 2002c) (Table 10). Within California, land trusts have protected rangeland through ownership, purchase of conservation easements, or land transfers to governmental agencies (Kuminoff et al., 2001) (Table 11). See the online document [Farmland Conversion: Perceptions and Realities](#) for more information.

Table 10. Number of land trusts and acreage protected for a selection of states as of 2000 (all lands, including forest and rangeland)

State	Number of land trusts	Total acres	Acres owned by trusts	Acres under easement	Acres transferred and conserved by other means
California	132	1,251,782	199,789	160,671	891,322
Massachusetts	143	209,967	103,045	50,061	56,861
Michigan	38	79,456	33,654	20,877	24,925
Nevada	2	12,225	6,930		5,295
Oregon	15	24,567	1,177	13,597	9,793
Washington	29	41,728	9,742	21,285	10,701
Totals	1263	6,479,674	1,263,711	2,595,923	2,620,040

Source: Land Trust Alliance, 2001

Table 11. Local land trusts and conservancies by county

County	Land trusts and conservancies
Alameda	-
Alpine	-
Amador	Foothill Conservancy
Butte	Sacramento River Preservation Trust
Calaveras	Foothill Conservancy, Mountain Conservancy
Colusa	-
Contra Costa	Martinez Regional Land Trust
Del Norte	-
El Dorado	Placer Land Trust and Nature Center, American River Conservancy
Fresno	San Joaquin River Parkway and Conservation Trust, San Joaquin Parkway Conservancy, Sierra Foothill Conservancy
Glenn	-
Humboldt	-
Imperial	-
Inyo	-
Kern	-
Kings	-
Lake	Lassen Land and Trails Trust
Lassen	-
Los Angeles	Tonner Canyon Wilderness Conservancy, Palos Verdes Peninsula Land Conservancy, Ballona Wetland Land Trust, Mountains Restoration Trust, Santa Catalina Island Conservancy, Santa Monica Mountains Conservancy
Madera	Yosemite Restoration Trust
Marin	-
Mariposa	Yosemite Restoration Trust
Mendocino	Comptche Land Conservancy, Anderson Valley Land Trust, Coastal Land Trust, Mendocino Land Trust, Redwood Coast Land Conservancy
Merced	-
Modoc	-
Mono	-
Monterey	Big Sur Land Trust
Napa	Napa County Land Trust
Nevada	Truckee Donner Land Trust, Nevada County Land Trust
Orange	Bolsa Chica Land Trust, Huntington Beach Wetlands Conservancy, Laguna Canyon Conservancy, Newport Conservancy, The Nature Conservancy - Santa Margarita River/Santa Ana Mountains
Placer	Truckee Donner Land Trust, Placer Land Trust and Nature Center, Dry Creek Conservancy, Auburn Parks Conservancy
Plumas	-
Riverside	Fallbrook Land Conservancy
Sacramento	Dry Creek Conservancy, The Nature Conservancy - Cosumnes River Preserve
San Benito	-
San Bernardino	Tonner Canyon Wilderness Conservancy, San Timoteo Greenway Conservancy
San Diego	Del Mar Terrace Conservancy, San Dieguito River Valley Land Conservancy, Bayfront Conservancy Trust, Escondido Creek Conservancy, Fallbrook Land Conservancy, Pamo Valley Conservancy, San Elijo Lagoon Conservancy
San Francisco	Mission Creek Conservancy
San Joaquin	-
San Luis Obispo	Land Conservancy of San Luis Obispo County, Morro Bay Project Conservancy, Greenspace: The Cambria Land Trust
San Mateo	-
Santa Barbara	Land Trust for Santa Barbara County
Santa Clara	-
Santa Cruz	Land Trust of Santa Cruz County
Shasta	Shasta Land Trust
Sierra	-
Siskiyou	-
Solano	-
Sonoma	Sonoma Land Trust, Bodega Land Trust
Stanislaus	-
Sutter	Yuba-Sutter Land Trust
Tehama	-
Trinity	-
Tulare	Four Creeks Land Trust, Kaweah Land Trust, Tule Oaks Land Trust, Tule River Conservancy
Tuolumne	Yosemite Restoration Trust, Mountain Conservancy, Tuolumne River Preservation Trust
Ventura	-
Yolo	-
Yuba	Yuba-Sutter Land Trust
Statewide groups	California Nature Conservancy, Trust for Public Land, Pacific Forest Trust

Source: Land Trust Alliance, 2001

Trusts and conservancies protect lands through market-based compensatory measures such as buying development rights from landowners in the form of conservation easements, development rights, or direct acquisition.

Trusts and conservancies protect lands through market-based compensatory measures.

Conservation easements have been growing in popularity and are evolving in methodology. Some have suggested that the easement program be modeled after the federal Wetlands Reserve Program (WRP). This program offers a choice of easements to the farmer—10 years, 30 years, and in perpetuity. The prospect of leased easements and annual lease payments in perpetuity may appeal to ranching families that have held their ranches for generations. The combination of leased easements and yearly lease payments could be more attractive than a one-time-payment, which applies only to a single generation (Bacchi, 2000).

While funding may come from a wide variety of sources, funding for easements and other forms of land conservation usually comes from shared resources—private, non-profit, and public (Table 12).

Table 12. Public funding for land conservation

State programs	Sponsoring agency	Description
California Farmland Conservancy Program (CFCP)	DOC, Division of Land Resource Protection	Available for projects that provide long-term protection of farmland through the following types of grants: agricultural conservation, easement acquisition projects, fee title acquisition projects, policy/planning projects and land improvement projects (matching)
CALFED Bay-Delta Program	CALFED	Available for ecosystem restoration programs and projects for the improvement of the Bay-Delta ecosystem through numerous grant programs (matching)
Environmental Enhancement and Mitigation Program Fund	California Resources Agency	Available for projects that mitigate, directly or indirectly, the environmental impacts of transportation facilities. This program awards funds in the following three categories: highway landscape and urban forestry, resource lands, and roadside recreation
Habitat Conservation Fund	DPR	Provides funds on a revolving basis for the acquisition, restoration, and enhancement of wildlife habitat and natural areas. Acquisition funds are awarded for the following projects: deer and mountain lion habitat, including oak woodlands, habitat for rare and endangered, threatened, or fully protected species, wildlife corridors and urban trails, aquatic habitat for spawning and rearing of anadromous salmonids and trout resources, and riparian habitat. Enhancement and restoration funds are awarded for the following projects: wetlands, aquatic habitat for spawning and rearing of anadromous salmonids and trout resources, and riparian habitat. Finally, funds are also awarded for programs that provide for the interpretation of the State's park and wildlife resources and programs that bring urban residents into park and wildlife areas (these are matching funds)
Proposition 12 Funding	California Conservation Corps, State of California Wildlife Conservation Board (WCB), DOC and California Resources Agency	In March 2000, California voters approved Proposition 12, which increased funding for certain existing programs or established new sources of funds for parks and recreational resources including: DPR Urban Recreational and Cultural Centers, Museums, and Facilities for Wildlife or Environmental Education Program; Per Capita Program; Roberti-Z' Berg-Harris Program; Non-Motorized Trails; Murray Hayden Urban Parks and Youth Services Program; Riparian and Riverine Program; and Zoos and Aquariums Program.
Proposition 13 Funding	DWR, DFG, SWRCB	In March 2000, voters approved California State Proposition 13, thus substantially increasing funding for water resources throughout the following programs: State Flood Protection Corridor Program; Urban Streams Restoration Program; River Protection Program; Coastal Watershed Salmon Habitat Program; Watershed Protection Program; Nonpoint Source Control Program; Coastal Nonpoint Source Control Program.
Recreational Trails Program	DPR	Provides funds for recreational trails and trails-related projects. Funds are awarded in two categories, motorized and non-motorized projects (these are matching funds)

Source: *Trust for Public Land, 2002*

State conservancies support land trusts as well. California has authorized seven conservancies, each a unit of the California Resources Agency. Their goal is to purchase and protect undeveloped lands in various parts of the State that are threatened by impacts, such as development. The real strength of these conservancies is that they can allocate statewide resources to protect resources in specific geographical

areas of high public value. Examples are the Lake Tahoe Basin and the California coastline. These conservancies and their corresponding geographical areas are summarized in Table 13 (California Resources Agency, 2000b). See the online document [Conservancies: California Resources Agency](#) for more information.

Table 13. California conservancies and their geographic areas

Conservancy	Area	Purpose
Coastal Conservancy	California coastline	Public access, coastal management, vistas
California Tahoe Conservancy	Lake Tahoe Basin	Access, protection of shorelands
Santa Monica Mountains Conservancy	Santa Monica and Santa Susanna Mountains, and Placerita Canyon	Open space, recreation, wildlife habitat
San Joaquin River Conservancy	Fresno and Madera Counties	Open space, recreation, wildlife habitat
Coachella Valley Mountains Conservancy	Coachella Valley	Wildlife habitat values for NCCP
San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy	Los Angeles County area	Open space, recreation, wildlife habitat, watershed restoration and improvement
Baldwin Hills Conservancy	Baldwin Hills, Los Angeles County	Open space, recreation, wildlife habitat

Source: compiled by FRAP from California Resources Agency, 2000b

According to the Legislative Analyst, the 2000-2001 budget allocated approximately \$300 million to conservancies for the purposes of land acquisition and capital outlay (Legislative Analyst's Office, 2001). About two-thirds of this money comes from California's general obligation bonds authorized by Proposition 12. The conservancy's executive board usually chooses specific properties. Once purchased, other public agencies may manage the property.

Funding for local land trusts and related environmental programs also comes from a variety of federal, state, and non-profit sources (Table 14).

Funding for local land trusts and related environmental programs comes from a variety of federal, state, and non-profit sources.

Table 14. Examples of sources of funding and assistance for land trusts

Land trust funding and assistance	Sponsoring agency	Description
Technical Assistance	California Coastal Conservancy	The California Coastal Conservancy's Nonprofit Program.
Environmental Education Program	California Department of Education	Grants are available to land trusts in order to establish and implement environmental education programs, develop program facilities, and organize regional or Statewide communications programs.
Environmental Enhancement and Mitigation Grants	California Resources Agency	Grants are available for projects that mitigate, directly or indirectly, the environmental impacts of modified or new public transportation facilities, including roads and railways. Funding is available for planning, restoration (especially tree planting), and land acquisition. Grants are usually limited to \$500,000. To date, most of the funding has gone to local and State agency projects, although many projects involved a non-profit partner.
Environmental License Plate Fund Grants	California Resources Agency	Funds are available for land acquisition or easements that accomplish the following: provide environmental protection; protect, enhance, and restore natural areas, fish and wildlife habitat, and related water quality; protect nongame species and threatened and endangered animals and plants; and acquire sensitive natural areas for addition to State, regional, and local park systems.
Habitat Conservation Fund	DPR	Grants are available for the acquisition, restoration, and enhancement of wildlife habitat and significant natural areas. Cities, counties, and special management districts are eligible. Land trusts with qualifying projects may collaborate with a local agency in order to apply for the funds.
Inland Wetland Conservation Program	WCB	This program allows the WCB to provide grants and loans to local entities and nonprofits for projects that protect or enhance wetland habitat in the Central Valley. Land trusts can apply directly to the WCB.
Nonpoint Source Water Quality Improvement Grant	SWRCB	This funding is available through Section 319 of the federal CWA. SWRCB receives funds for this program from the EPA. Grants are available for projects that improve or protect water quality impaired or threatened by nonpoint source pollution. Nonfederal matching funds are required. Land trusts can apply directly.
Resource Enhancement Planning and Restoration Grants	California Coastal Conservancy	These grants are available through the California Coastal Conservancy in order to prepare plans specifying the enhancement and restoration of wetlands, dunes, rivers, streams, and watersheds. Funding is dependent on congressional appropriations and varies year to year. In 1991-1992, \$1 million was available Statewide. The maximum grant award was \$2 million. Land trusts can apply directly and the application process is continuous.
Riparian Habitat Conservation Program	WCB	This program was established in 1992 by the WCB allowing it to issue grants and loans to public agencies and nonprofits for the acquisition or restoration of riparian habitat throughout California. The program is funded by Proposition 117. In 1991-1992, the program awarded \$1.5 million in grants. Land trusts can apply directly to the WCB and the application process is continuous.
Transportation Enhancement Activities Program	California Department of Transportation	Eligible projects are those related to, or in the area served by, any active or completed transportation project that involves Federal transportation funds. Non-federal matching funds are required totaling 12.5 percent of the amount requested. Land trusts cannot apply directly but can submit joint projects with a public agency sponsor, such as a city, regional park district, county, or State agency.
Urban Streams Restoration Grants	DWR	Grants are available for projects that reduce damage from stream bank erosion, watershed instability, and floods while restoring the environmental and aesthetic values of the streams. Funding is available for planning and restoration work. Proposals that encourage stewardship and community involvement are given highest priority. Land trusts may apply directly, but applications must be co-sponsored by a government agency.
CFCP	DOC	The CFCP, formerly known as the Agricultural Land Stewardship Program, was created in 1996, and provides grant funding for projects which use and support agricultural conservation easements protecting agricultural lands.
North American Wetlands Conservation Fund	FWS and North American Wetlands Conservation Council	The primary source of these funds is the federal fee on hunting licenses. They are managed jointly by the FWS and the North American Wetlands Conservation Council. Grants are available for wetlands conservation projects involving acquisition, restoration, enhancement, creation, and management of wetland ecosystems and other habitat for fish and wildlife, particularly migratory birds. Grant-making priorities are consistent with the goals of the North American Waterfowl Management Plan. Non-federal matching funds are required. Land trusts can apply directly.
The World Wildlife Foundation's Innovative Grants Program	World Wildlife Foundation	This program offers grants of up to \$8,000 to assist local, regional, and statewide nonprofit organizations in developing innovative local conservation strategies. Preference is given to projects that conserve wetlands, coastal resources, migratory bird habitat, endangered species habitat, or protected natural areas.
National Coastal Wetland Restoration Grants	FWS	Grants are available to State agencies for the acquisition of interests in coastal lands or waters and for the restoration, management, or enhancement of coastal wetland ecosystems. Fund availability depends on U.S. Congressional appropriations and varies from year to year. Land trusts cannot apply directly but must collaborate with state agencies.
Near Coastal Waters Program	EPA	Grants are available for habitat protection projects in coastal watersheds. Eligible projects include those that involve planning, research, and implementation. Available funding depends on U.S. Congressional appropriations and varies from year to year. Non-federal matching funds are required. Land trusts can apply directly.

Source: Information Center for the Environment, 1997b

Federal policy has supported the development of land trusts. For example, the role of land trusts in California was potentially strengthened by the passage of the American Farm and Ranch Protection Act in 1997. The law provides that 40 percent of the land value covered by a conservation easement (beyond the value of the easement itself) is excluded from estate tax. The amount is limited to \$500,000.

The Federal Transportation Equity Act for the 21st Century (TEA-21) increased support for land trusts. This \$218 billion package reauthorized and improved the nation's primary transportation laws. It



Education opportunities along Volcanic Legacy Scenic Byway, Lassen County, California. Photo courtesy of FWS and National Scenic Byways (National Scenic Byways Online, 2002).

provided resources for land trusts and preserved the Transportation Enhancements Program. Furthermore, the package allocated over \$600 million annually for this program, a 40 percent increase over previous funding. These funds can be used to create greenways, trails, and bike paths, and to purchase conservation easements on or fee titles for open spaces, scenic vistas, or historical highways. States have greater flexibility regarding matching requirements (Federal Highway Administration, 2002). See the online document [TEA-21: Moving America into the 21st Century](#) for more information.

In addition to the restoration and mitigation programs of the EPA and FWS, the USDA maintains several conservation programs affecting landowners in California. One is the Forest Legacy Program, part of the 1990 Federal Farm Bill (16 U.S.C. Sec. 2103c). It addressed the pressures created by greater population densities and user demands on private forest lands to convert lands to other uses. It is a voluntary USFS program and provides enrolled states with grants in order to purchase conservation easements and acquire environmentally sensitive or threatened forestlands. Under this program, states identify environmentally important forest lands threatened by conversion to non-forest uses. Funds may be used to purchase conservation easements from willing landowners. Additionally, landowners are required to prepare a multi-resource management plan.

Recently, the Forest Legacy Program received additional funding from the passage of the California Forest Legacy Act (SB 1832) in 2000. This law allows CDF to acquire conservation easements and permit federal and State agencies, local governments, and nonprofit land trust organizations to hold conservation easements acquired pursuant to the California Forest Legacy Program (USFS, 2002). See the online document [Forest Legacy Program: Protecting private forest lands from being converted to non-forest uses](#) for more information. The program is funded by gifts, donations, federal grants, and loans, and from the sale of bonds pursuant to the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000. There are additional USDA conservation programs operating in California.

The major federal conservation fund is the Land and Water Conservation Fund (LWCF), a special account designed to be the main federal source funding the acquisition of new recreation lands. The NPS, BLM, FWS, and USFS all receive a portion of these funds. States receive the remainder as matching grants for the acquisition and development of recreation sites and facilities (Table 17). Fund revenues come from designated sources and are available only after Congress appropriates them.

Table 17. Land and water conservation fund appropriations in recent years (million dollars)

Agency	FY 1999 enacted	FY 2000 enacted	FY 2001 proposed	FY 2001 enacted
USFS	118.0	155.6	130.0	155.5
NPS	148.0	175.7	297.5	215.6
(State Grants)	(0.5)	(41.0)	(150.0)	(90.5)
FWS	48.0	53.8	111.6	121.5
BLM	14.6	35.0	60.9	47.3
Total	328.6	420.1	600.0	540.0

Source: Zinn, 2001a

The backlog of conservation fund investments, wildlife management, and other related activities in California as well as other states resulted in the proposed Conservation and Reinvestment Act of the 106th Congress. The act proposed three major changes in federal conservation policy. First, it proposed that a 15-year commitment be made to projects rather than annual appropriations. Second, it suggested that funds generated by non-renewable resources should be used to invest in renewable resources. For example, federal offshore oil and natural gas leases would partially fund investment in these resources. Third, state and local governments as well as land trusts would be given the lead role in conservation work. Land trusts, state fish and wildlife agencies, historic recreation groups, national and local park organizations, outdoor recreation interests, and other groups supported the proposed act.

The bill passed the House but did not pass the Senate. Instead, the Department of Interior along with the Interior and Related Agencies Appropriations Act of 2000 provided one-year funding for state wildlife conservation. A \$50 million appropriation was also included in the Commerce, Justice, and State Appropriations Act, providing an additional one-year funding source for wildlife projects. Funds were distributed to each state based on a formula of its land area and population. California received approximately \$2.4 million of this funding (Teaming with Wildlife, 2002). See the online document [Teaming with Wildlife](#) for more information.



Encroachment on California gnatcatcher habitat in San Diego County, California. Photo courtesy of FWS / Claire Dobert.

Strong support remains for increased federal conservation spending. The Bush Administration announced that it would seek full funding for the LWCF. In fiscal year 2002, half these funds (\$450 million) would be distributed to the four federal land management agencies, and an identical amount would be distributed to state grant programs. The Administration also proposes to allocate \$50 million from the federal appropriation to provide state grants. These grants would be awarded to landowners who wish to enhance habitat for rare species while carrying out traditional land management activities (Zinn, 2001b). See the online document [Protecting Natural Resources and Managing Growth: Issues in the 107th Congress](#) for more information.

Strong support remains for increased federal spending on conservation.

Conclusion

Two forces operated in the 1990s to reshape California's forest and rangeland institutions: the strong influence of the federal government and the increase in local activities.

The implementation of the federal CWA, CAA, and ESA shifted the balance of power from more general agencies like CDF and the USFS to agencies that, by law, concentrate on specific resources. In addition, the impact of the ecosystem management approaches present in the NWFP and the Sierra Nevada Framework has reshaped priorities and management of national forests and BLM districts in California. The system of reserves, wide riparian areas, and connections to upslope terrain used on federal lands often differs from the landscape of private lands. There is no question that federal policies affect private lands.

The rich and diverse increase in local activities within forested and range watersheds were another force. Locals share a sense of "place" with common problems. Because California residents are so mobile, acquaintance and communication are of greater importance as new and old residents integrate into communities. Most residents, new and old, share a common belief in conservation. The debate remains over what forests should produce and how to produce it. Experience shows that individuals at the local level can develop sufficient trust to agree on common problems and actions to resolve them.

In many cases, local citizens are suspicious of government officials especially if local agency representation is nonexistent. Yet, it is often state and federal agencies that provide funding or the influence needed to influence project selection. These factors create an inherent tension in which each must ultimately listen to each other. These two forces—a highly funded, centralized government and local citizens possessing both energy and common problems—are shaping the institutions of the 2001-2010 decade.

Glossary

anadromous salmon: salmon species, including steelhead, which use fresh waterbodies and oceans for various life stages.

ARB: California Air Resources Board.

BLM: U.S. Bureau of Land Management.

BMP: Best Management Practices.

CAA: Clean Air Act.

CASPO: California Spotted Owl Interim Guidelines.

CDF: California Department of Forestry and Fire Protection.

CEQA: California Environmental Quality Act.

Two forces operated in the 1990s to reshape California's forest and rangeland institutions. The first factor was the strong influence of the federal government.

The second force was the rich and diverse increase in local activities within forested and range watersheds.

CERES: California Environmental Resources Evaluation System.

CERT: Community Economic Revitalization Team.

CFCP: California Farmland Conservancy Program.

CNAHC: California Native American Heritage Commission.

CRMP: Coordinated Resource Management and Planning.

CVP: Central Valley Project.

CWA: Clean Water Act.

CWE: Cumulative Watershed Effects.

DEIS: Draft Environmental Impact Statement.

DFG: California Department of Fish and Game.

DOC: California Department of Conservation.

DOI: U.S. Department of the Interior.

DPR: California Department of Parks and Recreation.

DWR: California Department of Water Resources.

ecotourism: Ecologically sustainable tourism with a primary focus on experiencing natural areas that fosters environmental and cultural understanding, appreciation, and conservation.

EO: Executive Order.

EPA: U.S. Environmental Protection Agency.

ERPP: Ecosystem Restoration Program Plan.

ESA: federal Endangered Species Act.

FACA: Federal Advisory Committee Act.

FEMAT: Forest Ecosystem Management Assessment Team.

FPR: Forest Practice Rule.

FRAP: California Department of Forestry and Fire Protection, Fire and Resource Assessment Program.

FSC: Fire Safe Council.

FWS: U.S. Fish and Wildlife Service.

FY: fiscal year.

HCP: Habitat Conservation Plan.

interbasin transfer: flows of air or air pollutants from one air basin designated by the Air Quality Control Boards to another air basin.

late successional: life stage of vegetations where plant communities are in a stable state reflective of increased age.

MAA: Management Agency Agreement.

MOU: Memorandum of Understanding.

NCCP: Natural Community Conservation Planning.

NCWAP: North Coast Watershed Assessment Program.

NMFS: National Marine Fisheries Service.

nonpoint: Pollution whose source cannot be ascertained including runoff from storm water and agricultural, range, and forestry operations, as well as dust and air pollution that contaminate waterbodies.

NPS: National Park Service.

NRCS: U.S. Natural Resources Conservation Service.

NWEAI: Northwest Economic Adjustment Initiative.

NWFP: Northwest Forest Plan.

outsloping: an engineering term for design of a road where the road is tilted from the cut band to the fill slope to produce water drainage.

point: pollution coming from discrete sources, such as a discharge pipe from a factory or a sewage treatment plant.

QLG: Quincy Library Group.

RCD: Resource Conservation District.

riparian: relating to or located on the banks of a river or stream.

ROD: record of decision.

RWQCB: Regional Water Quality Control Board.

sawtimber: Live trees of commercial species containing at least one 12 foot sawlog or two noncontiguous 8 foot logs. Softwoods must be at least 9 inches in diameter and hardwoods at least 11 inches in diameter.

SIC: Standard Industrial Classification.

SIC 24: The forest products industry; a Standard Industrial Classification sector.

silviculture: Generally, the science and art of cultivating (such as with growing and tending) forest crops, based on the knowledge of silvics. More explicitly, the theory and practice of controlling the establishment, composition, constitution, and growth of forests.

SNEP: Sierra Nevada Ecosystem Project.

SNFPA: Sierra Nevada Forest Plan Amendment.

SRP: Scientific Review Panel.

stand basal area: the accumulated sum of surface area of stumps of all trees in a particular area

SWP: State Water Project.

SWRCB: California State Water Resources Control Board.

THP: timber harvesting plan.

Total Maximum Daily Load: A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, as well as an estimation of the percentage originating from each pollution source. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and non-point sources. The calculation must include a margin of safety to ensure that the waterbody can be used for State-designated purposes. The calculation must also account for seasonal variation in water quality.

TMDL: See **Total Maximum Daily Load**.

USDA: U.S. Department of Agriculture.

USFS: U.S. Forest Service.

UWA: Unified Watershed Assessment.

WAG: Watershed Advisory Group.

watershed: the land area drained by a particular streamcourse

WCB: State of California Wildlife Conservation Board.

WMI: Watershed Management Initiative.

WRP: Wetlands Reserve Program.

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